

REUTHER, R.; DRVODELIC, Edgar [translator]

Determination of the sensitometric characteristics of photographer paper. *Kemija u industriji* no.5:252-264 My '62.

REUTIN, P.D., starshiy prepodavatel'

Potentials for shortening building time and lowering the cost of
erecting foundations for 4-5 story apartment houses. Trudy
MIEI no.15:109-110 '61. (MIRA 14:12)

1. Kazanskiy inzhenerno-stroitel'nyy institut.
(Apartment houses)
(Foundations)

REUTOV, N.N.

Method of determining the speed of hardening of centrifugal
castings. Lit.proizv. no.7:43-44 JI '61. (MIRA 14:7)
(Centrifugal casting)

REUTOV, N.N., kand.tekhn.nauk

Effect of raining of the metal in centrifugal casting on the
quality of the cast products. Stal' 21 no. 4:372-374 Ap '61.
(MIRA 14:4)

(Centrifugal casting)

REUSS, E., prof.; THAMM, F.

The condition of membrane stress of a spheric shell in the vicinity of concentrated momentum. Periodica polytechnica 4 no.3:217-226 '60.
(EEAI 10:6)

1. Lehrstuhl für Technische Mechanik der Technischen Universität,
Budapest.

(Structural shells) (Strains and stresses)

E. REUSS.

"The stress strain relations of high viscous fluids and its application to supersonic regions." p. 65 (ACTA TECHNICA ACADEMIAE SCIENTIARUM HUNGARICAE, Vol 6, no. 1/2, 1953, Budapest, Hungary)

SO: Monthly List of East European Accessions, L.C., Vol. 2 No. 7, July 1953, Uncl.

REUSOVA, YE. P.

REUSOVA, YE. P.- "Amputation Method of Curing Pulpitis with Application of Penicillin."
Khar'kov Med Inst, Khar'kov, 1955 (Dissertations for Degree of Candidate of Medical
Sciences)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

14(0)

SOV/92-59 2-35/40

AUTHOR: Reutov, A.V., Master Driller

TITLE: Young Communist Brigade Im. XIII Congress of the All-Union Lenin's
Young Communist League (V komsomol'sko-molodezhnoy brigade XIII
s"yezda VLKSM)

PERIODICAL: Neftyanik, 1959, Nr 2, p 33 (USSR)

ABSTRACT: The author states that efforts made by the personnel of the Young Communist Brigade to boost the petroleum production were very successful, and as a result the brigade received an honorary title. The area exploited by 44 men of the brigade is approximately 80 km long. All production wells, controlled by the personnel of the brigade, are linked with petroleum gathering centers by telephone and radio transmitters of the "Urozhay" type. Modern equipment making it possible to perform hydraulic fracturing and flooding is at the disposal of the brigade. It also takes advantage of centrifugal submersible pumps. Petroleum free flow is stimulated by applying new advanced methods which lower the cost of petroleum production. Auxiliary equipment also facilitates operations carried out by the brigade.

ASSOCIATION: Neftypromysel 4 NPU Bugul'manef't' (The Fourth Oilfield of the Bugul'manef't' Petroleum Production Administration)

Card 1/1

REUTOV, F.M.

KOROSTELEV, V.Ye., polkovnik med. sluzhby; REUTOV, F.M., polkovnik med.
sluzhby

Conference on problems of endemic areas and the epidemiology of
particularly dangerous diseases. Voen.med.shur. no.3:94-96 Mr '57.
(EPIDEMIOLOGY) (MIRA 11:3)

REUTOV, I.

Competition is effective when it is concrete. Sov.profsolyuzy 5
no.11:22-25 N '57. (MIRA 10:11)

1. Master mashinostroitel'nogo tsekha Moskovskogo ordena Trudovogo
Krasnogo Znameni elektrolampovogo zavoda, chlen komissii po
proizvodstvenno-massovoy rabote zavodskogo komiteta.
(Electric industries)

REUTOV, L.M., inzh.

Mechanization of forging shops of the "Krasnyi Proletarii" Plant.
Mashinostroitel' no.7:12-14 J1 '59. (MIRA 12:11)
(Moscow--Forging)

25(7)

SOV/117-59-7-5/28

AUTHOR: Reutov, L.M., Engineer

TITLE: Mechanization of the Forging Shops of the Plant "Krasnyy Proletariy"

PERIODICAL: Mashinostroitel', 1959, Nr 7, pp 12-14 (USSR)

ABSTRACT: The Moskovskiy stankostroitel'nyy zavod "Krasnyy Proletariy" imeni Yefremova (Moscow Machine-Tool Plant "Krasnyy Proletariy" imeni Yefremov) produces metal-cutting machine tools of different types. The article contains a detailed description of all the innovations that have been introduced and are planned to be introduced in order to mechanize production in the forge shop (previously it consisted of three separate shops). At present the shop is being radically reconstructed in order to organize in it during 1959 - 1960 a fully mechanized production of stampings and forgings. Figure 1 shows the preparation section, which receives 90% of all rolled metal that comes to the plant, and makes different

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blanks for machining and forging. In 1959, a press was installed for cutting blanks of a 100 mm diameter, but as there is no furnace for heating the bars, this press cannot be fully utilized. Semi-automatic milling and centering machines ("MP-77" and "MP-78" of the plant imeni Ordzhonikidze) are installed. From the preparing section, the blanks will be moved by conveyer to the stamping section (Figure 2), where stampings for the lathe "LK62" are made. The following grades of steel are mostly used for stamping: "45", "40Kh", "40KhN", "ShKh15", "60S₂". Till 1958, this section had only two machines for hot stamping. In 1958 an 800 ton crank-lever press, a mechanical 2,500 ton forging press, a 160 and 1,200 ton forging machines, and a 315 ton trimming press were installed. In the same year gas was introduced as fuel for the furnaces instead of mazut. In 1960, it is intended to install two furnaces with non-oxidizing heating. Two furnaces with rotating bottom

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will provide continuously hot blanks for the stamping presses; the blanks' charging and discharging mechanism for these furnaces is under design development at the TsBKM. At present the plant, together with the NIIAvtogen is considering the use of electrode "NZh-3" for restoring the cutting edges of trimming dies. In Figure 3 are shown round inserts for the prismatic dies of the 2,500 ton press, and Figure 4 illustrates the idea of stamping "in pairs" different parts of the machine tool "IK62". Centralized feed of fluid lubricants to the presses and its pulverization on to the dies by a spray gun is being considered. The use of a similar device at the MZMA has given positive results. Other details are given in the article. There are 4 diagrams.

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S/128/60/000/001/003/007
A133/A127

11560

also 1454.1110

AUTHOR: Reutov, N. N.

TITLE: The chemical non-homogeneity of centrifugal steel castings

PERIODICAL: Liteynoye proizvodstvo, no. 1, 1960, 35-36

TEXT: The author comments on the phenomenon that centrifugal castings show a considerably greater chemical non-homogeneity than castings produced by stationary methods. Centrifugal casting involves, under the influence of centrifugal forces, displacement of primary crystals, of the liquid phases, and sometimes of the mother liquor. Therefore, it should be assumed that the chemical non-homogeneity is to grow with an increased rpm rate of the rotating mold. Actually, however, this is not the case at all. Tabulated data for large-size steel castings (weight: 2.5 tons, length: 6 m) indicate a low carbon, phosphorus and sulphur content in the peripheral layers and a concentrated amount of these elements in the central ar-

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A133/A127

The chemical non-homogeneity...

eas of the same, with a carbon content of 0.31% in the test sample from the ladle. The internal surface of the solidifying skin of the casting is a two-phase zone in which the mother liquor is distributed between the axis of dendrites (see Figure 1), concentrated with the liquation additives C, P, and S. Since the poured liquid melt cannot immediately gain the angular rotational speed of the mold the liquid melt will slip along the skin which first forms on the walls of the mold. This slip causes a washing-out of the mother liquor from the interaxial space of the two-phase zone, and consequently accounts for the nonuniform distribution of C, P, and S between the peripheral and central zones of the casting. Then, the author investigates the degree of the chemical non-homogeneity in centrifugal castings, depending on the rotational speed of the mold, the lining of the mold and the pouring temperature. It is indicated that non-homogeneity decreases if the metal is poured at very high temperatures, reducing the viscosity of the melt and decreasing the

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The chemical non-homogeneity...

the rate of crystallization at the surface of the mold. The lowering of the viscosity factor of the melt enhances the washing out of the mother liquor from the two-phase zone of the crystallizing skin (Footnote Ref.1: Liteynoye proizvodstvo No. 6, 1959) and thus contributes to an increase of the chemical non-homogeneity of centrifugal castings. On the other hand, the decrease of the hardening rate during the filling of the mold impedes the development of the non-homogeneity since only a smaller volume of the mother liquor is washed out from the peripheral zone of the casting. At elevated pouring temperatures (1,620°C) the decrease of the hardening rate of the skin proves to be the more powerful factor than the change of viscosity, resulting in a reduced chemical non-homogeneity as compared to centrifugal castings poured at 1,580°C. Tabulated data on non-homogeneity values for a centrifugal casting weighing 700 kg with a length of 3.6 m, produced once in a metallic mold and the second time in a mold lined with quartz sand indicate a lessened degree of non-homogeneity in the latter case which might be explained by a certain deceleration of the growth of the metallic skin X

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The chemical non-homogeneity...

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during pouring. Investigations on the effect of the rotational speed of the mold on the degree of non-homogeneity lead to the conclusion that high rotational speeds (1,600 rpm) yield the best results. The highest degree of non-homogeneity was observed at low rpm rates (between 300-600). This depends on the reduced wash-out rate of the liquation additives, moving from the peripheral zone to the central zone in connection with a reduced time lapse for the liquid melt to gain the same rotational speed which the mold had. Conclusively the author recommends the following methods to reduce the chemical non-homogeneity in centrifugal castings: to increase the rotational speed of the mold and to impede the growth of the skin on the walls of the mold during the filling process (by proper lining and heating the walls of the mold, and by increased pouring temperatures. There are 2 figures, 5 tables and 1 Soviet-bloc reference.

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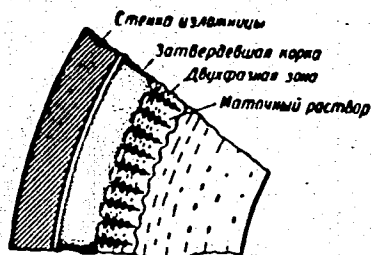
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The chemical non-homogeneity...

Legend to Figure 1:

- (1) Wall of the mold
- (2) Solidified skin of the metal
- (3) Two-phase zone
- (4) Mother liquid



Фиг. 1.

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Таблица 4

Измешивание mold	Температура °C в заливке	1) Содержание ликвигирующих элементов в %									2) Степень химиче- ской неомо- нородно- сти в %		
		в периферийной in periph zone			в центральной in cent. zone								
		C	P	S	C	P	S	C	P	S	C	P	S
Центробеж- ная, 1600 об/мин 1 рп	1580	0,34	0,033	0,030	0,28	0,037	0,042	6,0	12,1	40,0			
	1550	0,38	0,033	0,039	0,29	0,041	0,048	11,4	21,0	38,3			
	1550	0,38	0,037	0,038	0,37	0,042	0,040	5,7	13,5	11,1			
Центробеж- ная, 1000 об/мин 1 рп	1580	0,34	0,032	0,034	0,40	0,050	0,050	14,7	58,2	47,1			
	1550	0,38	0,036	0,038	0,48	0,053	0,053	27,3	47,2	47,2			
	1550	0,38	0,034	0,040	0,44	0,019	0,053	25,8	44,1	32,5			
Стационар- ная стат.	1550	0,35	0,040	0,037	0,35	0,038	0,039	0,0	15	5,4			
	1580	0,38	0,045	0,037	0,38	0,041	0,039	0,0	13,5	5,1			

Legend to Table 4:

- (1) Content of liquation additives in %
- (2) Degree of non-homogeneity in %

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AUTHOR: Reutov, N.N., Engineer

SOV/128-59-6-9/25

TITLE: Hydrodynamic State of Metal and its Influence on the Macro-structure of Centrifugal Castings

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 6, pp 22-27 (USSR)

ABSTRACT: As a basic technological factor determining the quality of centrifugal castings, usually the rotary speed of the metal die is taken. Practice has shown that from same type alloy and the same optimum number of rotations different types of crystallization structures of the casting are received in case other technological factors are altered. The author made his experiment on changes of the macrostructure of centrifugal castings under the influence of the heterogeneous hydrodynamic state of the metal. The experiments have been made with metal dies (of an inner diameter of 200 to 190 mm and of a length of 245 mm), and a water content of 2 Liter. By the aid of a light float of celluloid, it was possible to observe that during 1,200 to 800 rpm the rotations of the float were

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Hydrodynamic State of Metal and its Influence on the Macro-structure of Centrifugal Castings

equal to the rotations of the metal dies. Additionally, the lower speeds are described. In this connection it is established at what time the liquid has a laminar or a turbulence flow. The results are listed in tables. The author assumes that these results are valid too for liquid metal and therefore he made experiments with zinc and with chromium-nickel-steel. For these experiments he used the rules set by Hering and Sauerwald ("Zeitschrift Fuer Anorganische und Allgemeine Chemie", Nr 2, 1935). The change of temperature changes the macro-structure of the centrifugal casting too. Several micro-photos show the different types of crystallization. Conclusions: During the process of crystallization of the casting in the rotating metal die, the liquid metal might have different hydrodynamic states. There is a direct dependence between the hydrodynamic state and the macro-structure. There are 1 graph 3 diagrams 7 tables, 8 photographs, and

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Hydrodynamic State of Metal and its Influence on the Macro-structure of Centrifugal Castings

6 references, 4 of which are Soviet, and 2 German

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CA
Organomercury compounds. XI. Synthesis of aromatic organomercury salts through arylideneacetic acids.

A. N. Nesmeyanov and O. A. Reutov. *Izv. Akad. Nauk S.S.S.R., Khim. Nauk* 1948, 318-20; *ibid.* 1948, 1571. Salts of arylideneacetic acids with $HgCl_2$ readily yield arylmercury chlorides. The character of the reaction is similar to that exhibited by the double diazonium mercury salts, i.e. the mechanism is homolytic. PhN_2CO_2K (Thiele, *Ber.* 28, 2000) (2 g.) was added in 0.5 hr. to 8.7 g. $HgCl_2$ in 100 ml. Me_2CO at room temp. with stirring, which was continued 0.5 hr., after which the solvent was distilled, and the residue was washed with $NaCl$ and H_2O ; extn. with Me_2CO gave 1.78 g. (54%) $PhHgCl$, m. 251-2°, and 1.03 g. $HgCl_2$; the use of $HgBr_2$ gave 40% $PhHgBr$, m. 275°. $p-MeC_6H_4N_2CO_2K$ (by hydrolysis of the amide with cold aq. alkali, filtration at 50°, cooling and washing the orange product with $EtOH-Et_2O$) (2.03 g.) treated with 8.1 g. $HgCl_2$ as above gave 1.09 g. (33%) $p-MeC_6H_4HgCl$, m. 230-7°, and 1.49 g. $HgCl_2$; the $p-O_2NC_6H_4N_2CO_2K$ analog gave 12% $p-O_2NC_6H_4HgCl$, m. 265°, and $HgCl_2$ (94%).

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 $K-p-sulfophenylisocyanamide$ (from 10 g. K salt of $p-sulfophenylisocyanamide$ in the min. amt. of hot water, treated with hot 4 g. $KMnO_4$ in 80 ml. H_2O and 30 ml. H_2SO_4 , followed by filtration and cooling; yield 7 g., decomp. 255° after loss of water of crystn.) (10 g.) was hydrolyzed 1 hr. in the cold by 3.6 g. KOH and 30 ml. H_2O , warmed until clear, filtered, and cooled, yielding 6 g. of the K salt of $p-sulfophenylisocyanic acid$, yellow needles, decomp. about 265°, insol. in org. solvents, sol. in water; this (1.04 g.) added in 0.5 hr. to 3.4 g. $HgCl_2$ in 100 ml. Me_2CO with stirring at room temp. in the presence of 0.7 g. powd. Cu , stirred 0.5 hr., the solvent removed, and the product extd. from the dry residue in the form of $p-sulfophenylmercury H$ sulfate (31%) (see *J. Gen. Chem. (U.S.S.R.)* 4, 713 (1934) for properties). $K-2-naphthylisocyanide$ (1.8 g. from the hydrolysis of fresh $2-C_6H_4N_2CONH_2$ by 50% excess aq. alkali at 60°) and 6.1 g. $HgCl_2$ in 25 ml. Me_2CO treated with 1.2 g. PhN_2CO_2K and refluxed 2 hrs. yielded 94% $PhHg$ (from $EtOH$) and Hg (94%).
G. M. Kosolapoff

REUTOV, O. A.

PA 7/49T13

USSR/Chemistry - Mercury Compounds May/Jun 48
Chemistry - Synthesis

"Information From the Field of Mercury Organic
Compounds," A. N. Nesmeyanov, O. A. Reutov,
Chair of Org Chem, Chem Faculty, Moscow State U,
5 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 3

Describes synthesis of aromatic mercury organic
salts through aryl nitrocarboxylic salts. Submit-
ted 20 Sep 1947.

7/49T13

CH

10

Decomposition of aryldiazonium salts. A. N. Nesmeyanov and O. A. Reutov (Inst. Org. Chem., Moscow). *Izv. Akad. Nauk S.S.S.R., Otd. Khim. Nauk* 1960, 611-22. The mechanism of the decompn. of aryldiazonium salts is discussed from the point of view of formation of radicals. $\text{PhN}_2\text{CONH}_2$ (30 g.) and 30 g. H_2O treated with 45 ml. 1:1 KOH with stirring (continued 30-40 min.), then with 30 ml. H_2O , heated on a steam bath, and filtered hot gave 30 g. $\text{PhN}_2\text{CO}_2\text{K}$ (I), which must be used immediately after drying by suction. Addn. of 20.5 g. I to 35.7 g. *trans*- $\text{CICH}_2\text{CHHgCl}$ in 200 ml. dry Me_2CO gave CO_2 , N_2 , and C_6H_6 , as well as some C_6H_5 .

18.5% PhHgCl , a trace of Ph_2Hg , and 12.5% *trans*- PhCH_2CHCl . Similarly I with $\text{CH}_3\text{CH}_2\text{CHO}$ gave CO_2 , N_2 , Hg , PhHgCl , C_6H_6 , and AcH . I (100 g.) and 150 g. AcPh gave a resinous mass contg. a 1,4-diketone; reduction of the mass with Zn-Hg-HCl and bromination of the product gave $\text{Ph}(\text{CHBr})_2\text{Ph}$, m. 180°. Similar reaction of I with Ph_2CO gave 10.5% $\text{PhC}_6\text{H}_4\text{Ph}$, m. 103°. I with a large excess of EtO_2CCl in Me_2CO gave 54% C_6H_5 , 17.5% PhNHCO_2Et , BrOEt , $(\text{EtO})_2\text{CO}$, and 13% $\text{CO}(\text{NHPh})$, m. 236°. I and AcCl gave C_6H_5 , Ac_2O , and $(\text{CH}_3\text{COCl})_2$. Clemmensen reduction of the tar formed from AcPh and I, along with the $(\text{BzCH}_2)_2$, gave some *p*-(H_2N) $_2\text{C}_6\text{H}_4$, and PhNH_2 (identified as AcNHPh). G. M. Kosolapoff

NESMEYANOV, A.N.: REUTOV, O.A.

Arylazocarboxylic Salts

Decomposition of arylazocarboxylic salts. Uch. zap. Mosk. un., No. 132, 1950.

9. Monthly List of Russian Accessions, Library of Congress, October 195²₈, Uncl.

REUTOV, O.A., author of

"Against Idealism in Chemistry."

(Translated at National Institutes of Health, Bethesda, Md.)

SO: Sovetskaia Kniga (11): 13-22, 1951. Full translation
available in ~~EN~~/M. Unclass.

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20

Some problems of theory of organic chemistry. O. A. Reutov. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 180-99(1951).—Extensive review of currently used methods of notation in org. chemistry to denote electronic shifts and to indicate resonance. The shortcomings of the resonance principle are discussed in detail and ways are indicated for future development of more descriptive structural formulas.
G. M. Kosolapoff

1951

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CA

Synthesis of organotin compounds through double diazonium salts. O. A. Reutov and O. A. Pitsyna (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 79, 819-21(1951).—Reaction of 20 g. $\text{PhN}_2\text{Cl-SbCl}_4$ with 5 g. Zn dust in 60 ml. EtOAc at 60°, filtration, concn. at room temp., and treatment with 5 N HCl and EtOH gave a little inorg. Sb compd., while treatment of an alc. soln. with NH_4OH gave 42% PhSbO_3 ; an Et₂O wash of the ppt. gave 2 g. PhSbO_3 , identified as the acetate, m. 131-2°. Hence since the result is duplicated when the evapn. is done in a N atm., the indication is that PhSbCl_4 is not formed from decompn. of the initial salt but by a secondary reaction, probably through participation of air at 30-5°, since the reaction does not occur at room temp. Probably the course is $3\text{PhSbCl}_4 + \text{O} \rightarrow \text{Ph}_3\text{SbCl}_4 + \text{SbOCl} + \text{SbCl}_3$. Ph_3SbCl_4 in EtOAc was freed of solvent at 30-5°, yielding 100% $\text{Ph}_3\text{Sb(O-OH)}$; hence PhSbCl_4 must be the origin of the Ph_3 deriv. When 10 g. $\text{PhN}_2\text{Cl-SbCl}_4$ in 50 ml. EtOAc is decomposed by 2.5 g. Zn dust at 60°, filtered, and the filtrate treated at 60° with 5 g. more $\text{PhN}_2\text{Cl-SbCl}_4$, a vigorous action results, and evapn. at 30-5° yields 60.4% $\text{Ph}_3\text{Sb(O-OH)-Sb}_2\text{O}_3$, which with hot dil. HCl yields Ph_3SbCl_4 , m. 175.5-6.0°. This probably arises by formation of PhSbCl_4 and SbCl_3 from the PhSbCl_4 reacting with $\text{PhN}_2\text{Cl-SbCl}_4$. G. M. Kosolapoff

REUTERS, C. S.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

② Chem
Synthesis of aromatic azo-~~aromatic~~ compounds from the
arylazocarboxylic salts. O. A. Rastov and Y. G. Bunde.
Bull. Acad. Sci. U.S.S.R. Div. Chem. Sci. 1952, 811-16
(Engl. translation).—See C.A. 48, 623d. H. L. H.

REUTOV, O.A.

v48 25 Jan 54

Organic Chem

Synthesis of aromatic organoarsenic compounds from the arylazocarboxylic salts. O. A. Reutov and Yu. G. Bundel. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1952, 1047-8; cf. C.A. 43, 171b; Kocheshkov and Nesmeyanov, C.A. 30, 4833. $\text{ArN}_2\text{CO}_2\text{K}$ reacted with AsCl_3 in the presence of air yielding double salts of ArN_2Cl and AsCl_3 . Reaction of $\text{ArN}_2\text{CO}_2\text{K}$ with AsCl_3 in Me_2CO or AcOEt yielded arsenicals in total yields up to 80%, ArAsO , $(\text{Ar}_2\text{As})_2\text{O}$, and $\text{ArAs}(\text{OH})_2$ being isolated. $\text{PhN}_2\text{CO}_2\text{K}$ (7 g.) added over 10 min. at room temp. to 10.2 g. AsCl_3 in 150 ml. dry Me_2CO , stirred 20 min., the inorg. ppt. (4.4 g.) filtered off and the filtrate concd. *in vacuo*, the residue treated with 2 portions (30 and 15 ml., resp.) 1:1 HCl and 15 ml. H_2O , then heated to 90-100° with 15 ml. 40% KOH, filtered hot, gave 0.8 g. insol. $(\text{Ph}_2\text{As})_2\text{O}$, m. 86-8° (from petr. ether). The filtrate chilled with ice-NaCl gave a mixt. of KCl and $(\text{Ph}_2\text{As})_2\text{O}$, which after leaching with H_2O amounted to 0.15 g., for a total yield of 21%; m. 88-90°. The filtrate from this treated with satd. aq. NH_4Cl gave 2.6 g. (42%) PhAsO , m. 127-30° (from $\text{CH}_2\text{Cl}_2\text{-Et}_2\text{O}$). $p\text{-MeC}_6\text{H}_4\text{N}_2\text{CO}_2\text{K}$ (9.5 g.) and 12.5 g. AsCl_3 allowed to react as above and treated similarly, gave after treatment with 30 ml. 50% KOH a ppt. which yielded on washing with H_2O 1.2 g. (20%) pure $[(p\text{-MeC}_6\text{H}_4)_2\text{As}]_2\text{O}$, m. 103-5° (from petr. ether). The filtrate with satd. NH_4Cl gave 32% $p\text{-MeC}_6\text{H}_4\text{AsO}$, m. 167-9° (from EtOH). Similarly 4.5 g. $p\text{-BrC}_6\text{H}_4\text{N}_2\text{CO}_2\text{K}$ and 4.6 g. AsCl_3 gave 34% $[(p\text{-BrC}_6\text{H}_4)_2\text{As}]_2\text{O}$, m. 157-9° (from CH_2Cl_2), and 47% $p\text{-BrC}_6\text{H}_4\text{AsO}$, m. 239-40° (from EtOH). $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{CO}_2\text{K}$ similarly gave 64% $p\text{-O}_2\text{NC}_6\text{H}_4\text{As}(\text{OH})_2$, decomp. on heating, purified by pptn. with HCl from hot concd. KOH. $2\text{-C}_6\text{H}_4\text{N}_2\text{CO}_2\text{K}$ similarly gave 30% $2\text{-C}_6\text{H}_4\text{As}(\text{OH})_2$, m. 140°, which was very sparingly sol. in org. solvents and was purified by washing with Et₂O-EtOH. Reaction of 3.7 g. 2,4,6- $\text{Br}_3\text{C}_6\text{H}_2\text{N}_2\text{CO}_2\text{K}$ with 4.7 g. AsCl_3 as above, followed by filtration, concn. and treatment with 50 ml. 1:1 HCl and

extrn. with Et₂O gave 36% 2,4,6- $\text{Br}_3\text{C}_6\text{H}_2\text{AsO}$, m. 219-20° (from EtOH). Soln. of 10 g. $\text{PhN}_2\text{Cl-FeCl}_3$ in least vol. Me_2CO treated with 8 g. AsCl_3 , cooled and dild. with Et₂O, gave a ppt. of crude $\text{PhN}_2\text{Cl-AsCl}_3$, decomp. 80-90°, which was unstable on storage the material was contaminated with considerable $(\text{PhN}_2\text{Cl})_2\text{AsCl}_3$. To 0.15 g. 2,4,6- $\text{Br}_3\text{C}_6\text{H}_2\text{AsO}$ in 1 ml. EtOH was added hot 0.13 g. HgCl_2 in 1.5 ml. EtOH followed by 0.75 ml. hot 5N NaOH; after 2 min. boiling the Hg was sepd. and the cooled filtrate dild. with 7 ml. H_2O gave sym-tribromobenzene, m. 118-20°, indicating a deviation from the normally expected formation of R_2Hg . To 23 g. AsCl_3 cooled to -15° in MePh was added 8 g. $\text{PhN}_2\text{CO}_2\text{K}$; no gas evolution took place. The temp. was allowed to rise to 20° while air was percolated through the mixt. (under these conditions reaction begins at 5°). After completion the ppt. of KCl, AsOCl and $\text{PhN}_2\text{Cl-AsCl}_3$ was sepd. (5.5 g.), washed with C_6H_6 and $\text{PhN}_2\text{Cl-AsCl}_3$ extd. by means of 20 ml. Me_2CO and the soln. treated with 3 g. HgCl_2 in Me_2CO , yielding $\text{PhN}_2\text{Cl-HgCl}_2$, decomp. 100-30°. Its suspension in Me_2CO or EtOAc was readily decompd. by Zn dust, which phenomenon was also observed on addn. of Zn dust to the reaction mixts. of $\text{ArN}_2\text{CO}_2\text{K}$ with AsCl_3 . If 5 g. $\text{PhN}_2\text{CO}_2\text{K}$ in 100 ml. Me_2CO is kept under N stream and is treated with 7.5 g. AsCl_3 in Me_2CO , a test sample shows no reaction with Zn dust, but even a brief contact with air causes this reaction to appear. Thus the synthesis of organoarsenicals by this method can be outlined as: $\text{ArN}_2\text{CO}_2\text{K} + \text{AsCl}_3 \rightarrow \text{KCl} + \text{ArN}_2\text{CO}_2\text{AsCl}_3 \rightarrow \text{N}_2 + \text{CO}_2 + \text{ArAsCl}_2\text{-ArAsCl}_2 + \text{H}_2\text{O} \rightarrow \text{ArAsO}$; $\text{ArAsCl}_2 + 2\text{H}_2\text{O} \rightarrow \text{ArAs}(\text{OH})_2$; $\text{ArN}_2\text{CO}_2\text{K} + \text{AsCl}_3 \rightarrow \text{ArAsCl}_2 + 2\text{N}_2 + 2\text{CO}_2 + 2\text{KCl}$; $2\text{ArAsCl}_2 + \text{H}_2\text{O} \rightarrow (\text{Ar}_2\text{As})_2\text{O}$. G. M. Kosolapoff.

Full translation in /M.

USSR/Chemistry - Antimony Compounds Jan/Feb 52

"Synthesis of Aromatic Organic Antimony Compounds
From Aryl Azocarboxylic Salts," O. A. Reutov,
O. A. Pitsyna

"Iz Ak Nauk, Otdel Khim Nauk" No 1, pp 93-101

The reaction proceeds by the general scheme
 $\text{ArN}_2\text{CO}_2\text{K} + \text{SbCl}_3 + \text{ArSbCl}_2 + \text{N}_2\text{CO}_2 + \text{HCl}$.

Aryl azocarboxylic salts are capable of forming
aryl diazonium salts under the action of antimony
tri- or pentachloride. Proposes a practical method

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(Contd)

for obtaining diphenyl antimonie acid by de-
composing the double salt of phenyl diazonium
chloride and antimony trichloride with zinc.

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REUTOV, O. A.

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USSR/Chemistry - Structural Theory

Apr 52

"Concerning the Problem of Mutual Influence of Atoms on Each Other in Molecules and the Conjugation of Bonds," O. A. Reutov, Moscow State U imeni M. V. Lomonosov

"Zhur Fiz Khim" Vol XXVI, No 4, pp 598-603

Discusses D. N. Shigorin's article "Some Problems of the Chemical Constitution of Molecules," "Zhur Fiz Khim" Vol XXV, No 6, 1951. Citing numerous examples of chem reactions, disputes Shigorin's view that there is no conjugation either between single and double bonds or between double bonds.

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REUTOV, O. A.

Double diazonium salts of antimony pentachloride and aromatic organoantimony compounds of pentavalent antimony. O. A. Reutov, *Doklady Akad. Nauk S.S.S.R.* 87, 73-6 (1952). Addn. of a soln. of a heavy metal chloride to an Me_2CO soln. of $\text{ArN}_2\text{Cl.FeCl}_3$, followed by addn. of Et_2O , gave a ppt. of the heavy metal chloride double diazonium salt ($\text{ArN}_2\text{Cl.MCl}_3$). Thus to 15.1 g. $\text{PhN}_2\text{Cl.FeCl}_3$ in dry Me_2CO was added with ice-cooling 18 g. SbCl_3 in 75 ml. CHCl_3 , followed by 200 ml. Et_2O , yielding 86% $\text{PhN}_2\text{Cl.SbCl}_3$, decomp. 66-7° (from $\text{Me}_2\text{CO-Et}_2\text{O}$), sol. in Me_2CO , less so in EtOH , sparingly in C_6H_6 , insol. in Et_2O or H_2O . Similarly, were obtained the following (having similar soly.): *p*- $\text{Me.C}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$, 85%, decomp. 107-7.5°; *o*- $\text{Cl.C}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$, 85%, decomp. 139°; *o*- $\text{O}_2\text{N.C}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$, 34%, decomp. 149-50°; *m*-analog, 77%, decomp. 141-2°; *p*-analog, 75%, decomp. 114-15°; 1- $\text{C}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$, 79%, decomp. 77-8°; 2-isomer, 65%, decomp. 92°; 2,4- $\text{Me}_2\text{C}_6\text{H}_3\text{N}_2\text{Cl.SbCl}_3$, 49%, decomp. 78-8.5°; *p*- $\text{C}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$, 76%, decomp. 125-6°. The products can be stored 1-8 weeks. Cooled soln. of PhSbO_3H_3 in alc. HCl treated with slight excess $\text{PhN}_2\text{Cl.FeCl}_3$ in least vol. of Me_2CO , followed by Et_2O , gave unstated yield of $\text{PhN}_2\text{Cl.PhSbCl}_3$, decomp. 89°; similarly was obtained $\text{PhN}_2\text{Cl.Ph.SbCl}_3$, decomp. 132-6°, and 2,4- $\text{Me}_2\text{C}_6\text{H}_3\text{N}_2\text{Cl.Ph.SbCl}_3$, decomp. 137-40°. G. M. Kosolapoff

10-9-51
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REUTOV, O.A.

New method of synthesis of organotin compounds of type Ar_2SnX_2 and Ar_2SnX . *Dokl. Akad. Nauk S.S.S.R.* 87, 901-4 (1953); cf. preceding abstr. —Use of Fe to decomp. Ar_2SnCl_2 is a convenient method for prep. Ar_2SnCl and Ar_2SnCl_2 derivs. To 5.6 g. powd. Fe in 50 ml. dry Me_2CO was added over 15 min. 11 g. Ph_2SnCl_2 in 40 ml. Me_2CO ; stirred 0.5 hr., the solvent distd., and the residue rubbed with 60 ml. 5N NaOH, filtered, the solid washed with 10% NaOH, and the filtrate acidified with 5N HCl, gave 67% diphenylstibinic acid, $\text{Ph}_2\text{SbO}_2\text{H}$; crystn. from 5N HCl reverted this to Ph_2SbCl_2 , m. 171-2°. Similarly, 11.35 g. $p\text{-MeC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$ and 5.6 g. powd. Fe in Me_2CO gave, after treatment of the residue with 6N HCl and diln. with cold 96% EtOH, 28.9% ($p\text{-MeC}_6\text{H}_4$)₂ SbCl_2 , m. 150-6.5°; the EtOH filtrate treated with 5% NH_4OH and ice gave 58% ($p\text{-MeC}_6\text{H}_4$)₂ SbO_2H , which, with hot HCl, gave ($p\text{-MeC}_6\text{H}_4$)₂ Sb(OH)Cl , decomp. 205-7°; 2,4- $\text{Me}_2\text{C}_6\text{H}_3\text{N}_2\text{Cl.SbCl}_2$ gave 52% (2,4- $\text{Me}_2\text{C}_6\text{H}_3$)₂ SbCl_2 , m. 190.5-1.5° (from EtOH- CHCl_3); $o\text{-ClC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$ gave 73% ($o\text{-ClC}_6\text{H}_4$)₂ SbCl_2 , m. 205-6° (from heptane) (185° given by Kocheshkov and Nesmevany, *Izvst. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1944, 416, is a misprint); and $m\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$ gave 72% ($m\text{-O}_2\text{NC}_6\text{H}_4$)₂ SbO_2H , which, with 5N HCl, gave R_2SbCl_2 , decomp. 182-5° in sealed tube. Similarly was obtained 88% ($p\text{-O}_2\text{NC}_6\text{H}_4$)₂ SbO_2H , unchanged at 280°, which, with 5N HCl, gave R_2SbCl_2 , decomp. 212-17°, after shrinking at 190°; and 2- $\text{C}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$ gave 79% (2- C_6H_4)₂ SbCl_2 , m. 158-60° (from AcOH or MeOH- Me_2CO).
G. M. Kozlapoff

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[Heterocyclic compounds] Geterotsiklicheskie soedineniia. Perevod s ang-
liiskogo I.F.Lutsenko, O.A.Reutova, N.K.Kochetkova, pod red. IU.K.IUr'eva.
Moskva, Izd-vo inostrannoi lit-ry, 1953- . (MLA 6:8)
(Heterocyclic compounds)

REUTOV, O.A.

[Organic synthesis] Organicheski sintez. Izd. 2. Moskva, Gos.
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(Chemistry, Organic--Synthesis)

REUTOV, O.A.

U S S R :

Optically active organomercury compounds. I. Preparation of diastereoisomeric *l*-menthyl esters of α -(bromomercuri)phenylacetic acid. A. N. Nesmeyanov, O. A. Reutov, and S. S. Poldubnaya. *Bull. Acad. Sci. U.S.S.R. Div. Chem. Sci.* 1953, 583-7 (Engl. translation).—See *C.A.* 48, 12692c. H, L, H.

REUTOV, C. A.

U S S R .

✓ Synthesis of organomercury compounds by the reaction
of organic halogen derivatives with metallic mercury. C.
A. Reutov and A. N. Nesmeyanov. *Bull. Acad. Sci. Div. Chem. Sci.* 1953, 588-90 (Engl. translation).
See C.A. 48, 12092g. H. L. H.

REUTOV, O. A.

No. 4

Optically active organomercury compounds. I. Preparation of diastereoisomeric 1-menthyl esters of α -(bromomercu-
~~ri)phenylacetic acid. A. N. Reutov, O. A. Reutov,~~
~~and S. S. Poddubnaya (M. V. Lomonosov State Univ.,~~
~~Moscow). Izvest. Akad. Nauk S.S.S.R., Otdel. Khim.~~
~~Nauk 1953, 649-54. Stereoisomeric 1-menthyl esters of~~
~~PhCH(HgBr)CO₂H with Hg yield an equimolar mixt. of the~~
~~corresponding diastereoisomeric menthyl esters: this fact~~
~~supports the contention (cf. C.A. 46, 10120h; following~~
~~abstr.) that a free radical with an unpaired electron on a C~~
~~atom has planar structure. The 2 isomers were sepd. by~~
~~crystn. from MeOH or Me₂CO. Esterification of racemic~~
~~PhCHBrCO₂H with 1-menthol in the presence of HCl gave:~~
~~a menthyl ester (I), m. 80°, [α]_D²⁰ 10.9° (EtOH) (from Me-~~
~~OH), and the isomeric liquid ester (II), bp 223-5°, [α]_D²⁰~~
~~-98.5° (EtOH). Shaking II (149 g.) with 1177 g. Hg 0.3~~
~~hr., letting stand 24 hrs. at room temp., washing with Et-~~
~~OH, and extg. the Hg deriv. with hot Me₂CO gave 68 g.~~
~~crude 1-menthyl 2-(bromomercu-ri)phenylacetate. Crystn.~~
~~of this from EtOH gave a product, m. 158-61°, whose ac-~~
~~tivity varied with the solvent used for crystn.: [α]_D²⁰ -74.6°~~
~~(from EtOH), -91.2° (from Me₂CO), -64° (from CCl₄),~~
~~-75.2° (from C₆H₆). This variability was held to be evi-~~
~~dence for the presence of 2 diastereoisomers. Similar reaction~~
~~of 35 g. I with 88 g. Hg in C₆H₆ 250 hrs. with shaking gave~~
~~after usual treatment and extn. with hot Me₂CO 1.3 g.~~
~~menthyl ester of PhCH(HgBr)CO₂H (2.4%), m. 155-6°~~
~~(crude), m. 157-8° (from MeOH), [α]_D²⁰ -73.8°. Heating~~
~~I with Hg at 95-100° with agitation 24 hrs. gave 35.9% of~~
~~the ester, m. 155-7°, [α]_D²⁰ -75.7° (from MeOH). Crystn.~~
~~from much MeOH gave a product, m. 162-3°, [α]_D²⁰ -96.4°~~
~~and the more sol. diastereoisomer, m. 152-4°, [α]_D²⁰ -49.3°.~~
~~Me₂CO gave similar results. G. M. Kosolapoff~~

REUTOV, O. A.

Synthesis of organomercury compounds by the reaction of organic halogen derivatives with metallic mercury. O. A. Reutov and A. N. Nesmeyanov (M. V. Lomonosov State Univ., Moscow). *Izvest. Akad. Nauk S.S.S.R., Udal. Khim. Nauk* 1953, 655-64. — The reaction of Hg with org. halides is activated by ultraviolet light and by Bz_2O_2 . Indicating the radical character of the reaction. It was shown that org. iodides and aliphatic and alkaryl bromides react with Hg, yielding organomercury compounds. Irradiation of 10 g. $CH_3CH_2CH_2Br$ and 34 g. Hg with ultraviolet light 48 hrs., evapn. of the RBr, extn. with Me_2CO , evapn. of the ext., and extn. of the residue with EtOH, gives about 9% $CH_3CH_2CH_2HgBr$, m. 118-18° (from dil. EtOH). The residue appears to be an alc-insol. polymer of the product. The above results are obtained in a quartz tube; in a glass tube the yield of $RHgBr$ rose to 20% and the polymer failed to form. A similar reaction run 19 hrs. in a quartz tube with 60 g. Hg gave a 30% yield. $CH_3CH_2CH_2Cl$ failed to react, as did $PhCH_2CH_2CH_2Cl$. $PhCH_2CH_2CH_2Br$ similarly gave at room temp., even without irradiation, 82% $PhCH_2CH_2CH_2HgBr$, decomp. 340-5° (from EtOH), when the RBr and Hg were shaken in EtOH some 15 min. The above-mentioned chlorides merely gave some Hg_2Cl_2 . $PhCH_2Br$ and Hg failed to react without irradiation at room temp.; on heating, with or without irradiation, the only products were tars, Hg_2Br_2 , $HgBr_2$, and HBr. Shaking 150 g. $PhCH_2BrCO_2Et$ and 480 g. Hg 0.5 hr., letting stand 2-3 hrs. at room temp., extg. with hot $CHCl_3$, evapn. the ext., and washing the residue with CCl_4 gave 73% $PhCH_2(HgBr)CO_2Et$, m. 125-6°

(from EtOH), which is readily decompd. by HCl to $HgCl_2$. Similarly 1-menthyl 2-bromophenylacetate gave 31% 1-menthyl 2-(bromomercuri)phenylacetate (I), m. 153-01° (from EtOH); this treated in dry $CHCl_3$ with dry NH_3 gave a ppt. of chloromercuramine while the soln. gave 42% symmetrical R_2Hg , $C_{10}H_{17}O_2Hg_2$, m. 105.5-6.5° (from MeOH). I suspended in MePh and treated with $AcCl$, then heated 2 hrs. on a steam bath, gave a copious ppt. of Hg halides, some 40% $PhCH_2CO_2Et$, and a similar yield of a product, b.p. 140-60°, which was a mixt. of about 50% $PhCH_2C(OEt)OAc$ and some 70% $PhCH_2AcCO_2Et$; this conclusion is supported by decolorization of $KMnO_4$ soln. or Br water, by formation of a purple color with $FeCl_3$, and by the formation of $PhNH_2$: $CMcCHPhCO_2Et$, m. 104°, with $PhNHNH_2$, and of $PhCH_2CO_2Et$ on shaking the mixed product in the cold with 2.5% KOH. Irradiation of 5 g. ICH_2CO_2Et and 25 g. Hg in CCl_4 in a quartz tube 10 hrs. gave some HgI_2 , Hg_2I_2 , and 0.2 g. $IHgCH_2CO_2Et$, m. 56-7° (from MeOH), which decomp. rapidly in HCl in the cold. Irradiation of PhI and Hg 40 hrs. gave 1.6 g. $PhHgI$, m. 208°. 1- $C_{10}H_{17}I$ shaken with Hg 50 hrs. gave 6% 1- $C_{10}H_{17}HgI$, m. 184.5°. $PhCH_2BrMe$ and Hg irradiated at 40° gave only tar, Hg_2Br_2 , and HBr; only Hg_2Br_2 formed when EtO_2CCH_2BrMe and Hg were treated similarly and the same resulted when $EtCH_2BrCO_2Et$ was employed. Hg and $CH_2Br(CO_2Et)$ thus treated gave only an organo-Hg polymeric material. The same result was obtained with $AcCH_2BrCO_2Et$. No reaction was obtained between Hg and $p-MeC_6H_4CPh_2CO_2Et$ at room temp. without irradiation; the same result was obtained with $PhCMcBrCO_2Et$. $BrCH_2CO_2Et$ and Hg ir-

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radiated at 40° gave only some Hg_2Br_2 and $HgBr_2$; the same resulted with $MeCHBrCHO$. At room temp. without irradiation Hg and $PhCHBrCHO$ gave only a polymeric product contg. Hg . No reaction took place between Hg and $BzCH_2Br$ on irradiation at 60°. Heating 126.5 g. $CHBr_3$ and 20 g. Hg deposited on $BaSO_4$ with 0.5 g. Bz_2O_2 8-10 hrs. with stirring at 100°, addn. of more Bz_2O_2 and $CHBr_3$, and heating a total of 16-20 hrs. gave 7 g. $HgBr_2$, some Hg_2Br_2 , and crude $BzOH$. Irradiation of such a reaction mixt. in a quartz vessel with stirring 28 hrs. gave $HgBr_2$, Hg_2Br_2 , and $CBBr_2CHBr_2$. Heating 126.5 g. $CHBr_3$ and 20 g. Hg on $BaSO_4$ on a steam bath 60 hrs. gave $HgBr_2$, Hg_2Br_2 , and 0.3 g. $CBBr_2CHBr_2$. Refluxing 100 g. CCl_4 , 20 g. Hg on $BaSO_4$, and 1 g. Bz_2O_2 50 hrs. with periodic addn. of Bz_2O_2 gave Hg_2Cl_2 and C_2Cl_6 (1.5 g.). Heating CCl_4 with Hg on $BaSO_4$ 40 hrs. at 120-30° in a sealed tube gave a little HCl , Hg_2Cl_2 , and 6% C_2Cl_6 . G. M. Kosolapoff

REUTOV, O.A.

U.S.S.R.

Optically active organomercury compounds. II. Mechanism of electrophilic displacement at a saturated carbon atom. A. N. Nesmeyanov, O. A. Reutov, and S. S. Poddubnaya. Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci. 1953, 753-60 (Engl. translation). See C.A. 49: 1647b; H: L: H

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Orally active organomercury compounds. II. Mechanism of electrophilic displacement at a saturated carbon atom. A. N. Nesmeyanov, O. A. Reutov, and S. S. Podubnyaya (M. V. Lomonosov State Univ., Moscow). *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1953, 850-9; cf. C.A. 48, 12692c.—During electrophilic displacement at an asymmetric C atom in symmetrization reaction of diastereoisomeric methyl esters of α -bromomercaptophenylacetic acid the configuration is retained. In the reaction of diastereoisomeric symmetric α -mercurated methyl esters of $\text{PhCH}_2\text{CO}_2\text{H}$ with HgBr_2 the configuration of the C atom undergoes inversion. In the absence of HgBr_2 the esters do not undergo racemization alone, under the xptl. conditions. It is concluded that in electrophilic displacement with retention of configuration, the active mechanism is $\text{S}_\text{N}1$ (i.e., carbonium type), while the reactions which produce inversion are the $\text{S}_\text{N}2$ types. The former are facilitated by solvents of nucleophilic nature such as ammonia. Into 10 g. L-pentyl α -bromomercaptophenyl acetate (I), (m. 101-2°, $[\alpha]_\text{D}^{20} -0.5^\circ$) in dry CHCl_3 was passed dry NH_3 for 2 hrs.; the ppt. was removed and the soln. satd. with NH_3 and left overnight; after filtration the soln. was evaporated, yielding 7 g. $\text{Hg}(\text{CHPhCO}_2\text{C}_5\text{H}_9)_2$ (I), m. 112-15°, $[\alpha]_\text{D}^{20} -14.1^\circ$. After repeated crystallization from EtOH there was obtained pure I, m. 110-23°, $[\alpha]_\text{D}^{20} -21.4^\circ$, no other isomer was found. Similar reaction of the isomeric ester, m. 162-4°, $[\alpha]_\text{D}^{20} -49.3^\circ$, gave only the isomer of I, m. 118-20°, $[\alpha]_\text{D}^{20} -7.7^\circ$. If refluxed in Me_2CO 8 hrs. failed to racemize or change its phys. properties. If heated in Me_2CO with HgBr_2 6 hrs. showed slow racemization, yielding a product, m. 151-5°, $[\alpha]_\text{D}^{20} -80.2^\circ$ (m. 110-18°, $[\alpha]_\text{D}^{20} -66^\circ$) and III reduced in Me_2CO in the presence of 11, 0 hrs. 8 hrs. gave a product, m. 157-8°, $[\alpha]_\text{D}^{20} -85.9^\circ$. Treatment of I with HgBr_2 yields an equimolar mixture of diastereoisomers of III, $[\alpha]_\text{D}^{20} -72^\circ$. Refluxing I in Me_2CO with HgBr_2 0 hrs. until the reaction was complete gave an equimolar mixt. of diastereoisomers of I, m. 115-7°, $[\alpha]_\text{D}^{20} -72.0^\circ$. G. M. Kosolov

REUTOV, O. A. Docent

"The Stereochemistry of Electrophilic Replacement of a Saturated Carbon Atom,"
a paper given at the All-University Scientific Conference "Lomonosov Lectures",
Vest. Mosk. Un., No.8, 1953

Translation U07895, 1 Mar 56

REUTOV, O. A.

USSR.

V-Synthesis of aromatic bismuth organic compounds through arylazocarboxylic acid salts. O. A. Reutov. *Vestnik Moskov. Univ.* B, No. 3, Ser. Fiz.-Mat. i Estest. Nauk No. 2, 119-23 (1963); cf. C.A. 47, 9911g; 48, 5135a. Treating a freshly distd. BiCl_3 (0.1 mole) in dry Me_2CO (200 ml.) with 0.05 mole $\text{PhN}_2\text{CO}_2\text{K}$ (I) 10 min. at -18° , then 1 hr. at increasingly higher temps. but not to exceed 20° , gradually adding powdered Bi (0.044 mole), filtering and washing with Me_2CO ; adding 50 ml. concd. NH_3 and then 200 ml. H_2O to the filtrate, filtering, and extg. with boiling C_6H_6 gave, after C_6H_6 was distd. off, 23% Ph_2Bi , m. 77.5° (from EtOH and Et₂O). Similarly were obtained: (*p*- MeC_6H_4)₂Bi (16.5%), m. 119° (from EtOH); (*p*- BrC_6H_4)₂Bi (18%), m. $148-9^\circ$ (from EtCO₂Me); (*p*- ClC_6H_4)₂Bi (7%), m. 115° (from EtCO₂Me and EtOH). Refluxing in C_6H_6 for 10 hrs. equivalent parts of I and BiCl_3 gave, after filtration, distn. of C_6H_6 and vacuum distn., biphenyl, which was nitrated to 4- $\text{O}_2\text{NC}_6\text{H}_4\text{Ph}$. Gerold Aufleger

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Reutov, O. A.

✓ Mutual influence of atoms in molecules with conjugated bonds. O. A. Reutov (M. V. Lomonosov State Univ., Moscow). *Dokl. Akad. Nauk SSSR*, 26, 698-699 (1983). -- Systematic errors in the article of Shigorin (*C.A.* 46, 2862g) on the nature of the chem. bond are discussed. The article is concerned with different σ - and π -bonds, which are not explained from a chem. and phys. point of view. The theory is not general, and on such basis one cannot build up a dialectic-materialistic theory, and particularly a chem. theory. The error lies in the wrong evaluation of conjugated bonds in org. chemistry. Conjugation of the type $C \equiv C - C \equiv C$ involve no doubt about statistical and dynamic effects resulting from mutual interaction of the double bonds. According to Shigorin butadiene does not have conjugated double bonds, just some difference from butylene. This mistaken point of view is due to failure to evaluate chem. methods for investigation of org. compds. By evaluation of the mutual effect of the atoms and groups, each compd. should be considered in comparison with others, otherwise the meaning may be lost. E.g., for a particular series of alcs. and amines some generalizations can be found. The main disadvantage of the Shigorin conclusions is that the formation and reactivity of benzene, benzene derivs., and heterocyclic compds. are explained in a similar way, without regard to the results obtained by other authoritative approaches. Michael Dymicky

REUTOV, O. A.

USSR/Chemistry - Structural Theory

Sep 53

"Problem of the Development of the Theory of Chemical Structure," O. A. Reutov

Zhur Fiz Khim, Vol 27, No 9, pp 1427-1429

D. N. Shigorin's criticism of the concept of conjugation of bonds on methodological grounds is unjustified. However, conjugation must be interpreted as due to mutual influence of atoms rather than to a process of interaction of bonds composed of valency electrons. It would be of advantage to abandon the assumption that bonds must correspond

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to valencies expressed by whole numbers. However, assignment of fractional values to bonds would make the writing of structural formulas difficult.

1. REUTOV, O. A.; PTITSYN, O. A.

2. USSR (600)

4. Arylation

7. Arylation of metalorganic compounds of trivalent antimony with the aid of diazo compounds, Dokl. AN SSSR 69, No. 5, 1953.

9. Monthly List of Russian Accessions. Library of Congress. April 1953. Unclassified.

REUTOV, O. A.

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

3
Stereochemistry of electrophilic substitution on a tetra-
hedral carbon. A. N. Nekrasov, O. A. Reutov, and
S. S. Pochinina. *Doklady Akad. Nauk S.S.S.R.* 88,
979-82 (1953).—The study was centered on the reactions
 $R_1Hg + HgX_2 \rightarrow 2RHgX$ and $2RHgX \rightarrow R_1Hg + HgX_2$. The
2 diastereoisomers of the *l*-menthyl ester of $PhCHBrCO_2H$
treated with Hg (cf. R. and Besprozvannyi, C.A. 46,
10120h) each gave a mixt. (I) of the isomers of the bromo-
mercuri derivs. which were sep'd. by crystn. from MeOH;
1 form, m. 162-3°, $[\alpha]_D^{25} -66.5^\circ$, the other form,
m. 152-4°, $[\alpha]_D^{25} -49.3^\circ$. An equimolar mixt. of the
2 isolated isomers has $[\alpha]_D^{25} -72.9^\circ$, while I had $[\alpha]_D^{25}$
from -71 to -70°. Treatment of the bromomercuri
derivs. with NH_3 in $CHCl_3$ gave $Hg(CHPhCO_2C_6H_5)_2$
(II); the $HgBr$ deriv. m. 161-2°, gave a II, m. 119-22°,
 $[\alpha]_D^{25} -21.4^\circ$, while the other isomer gave a II m. 118-20°,
 $[\alpha]_D^{25} -7.7^\circ$. This is explainable by preservation of the
configuration of the C atom during the reaction; thus the
case of electrophilic substitution leads to retention of the C
configuration. The II were treated with $HgBr_2$ in re-
fluxing Me_2CO ; each isomer gave the same mixt. of di-
astereoisomers of the $HgBr$ deriv., $[\alpha]_D^{25} -72.5^\circ$, cor-
responding to an equimolar mixt. Refluxing the $RHgX$
derivs. in Me_2CO alone does not lead to their racemization,
while in the presence of $HgBr_2$ there does take place a slow
racemization at the central C atom. This is a much slower
process than the reaction of R_1Hg with $HgBr_2$. Refluxing
 $HgBr_2$ in Me_2CO with either form of II in the presence of
 $RHgBr$ resulted in a reaction only between the 1st two
reagents. Since the II isomers had pure *L,L*- or *D,D*-con-
figurations, this reaction occurred with inversion of con-
figuration at the C atom. The results are interpreted in
terms of possible first and second order electrophilic sub-
stitution reactions. G. N. Kosolapoff

REUTOV, O. A.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

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② Arylation of organometallic compounds of trivalent antimony with the aid of SbCl_5 and SbCl_3 . O. A. Reutov and G. A. Pitsyna (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 89, 877-80 (1953); cf. C.A. 46, 6083f. — Ph_2SbOAc with $\text{PhN}:\text{NOAc}$ in cold Me_2CO yields 26% $\text{Ph}_2\text{Sb(OAc)}_3$. Similarly $p\text{-MeC}_6\text{H}_4\text{SbCl}_2$ yields $p\text{-MeC}_6\text{H}_4\text{SbPh(OAc)Cl}_2$, isolated as phenyl- p -tolylstibinic acid, m. 155-60°, which with hot 5N HCl gives $\text{Ph(p-MeC}_6\text{H}_4)_2\text{SbCl}_3$, m. 150-1.5°. $p\text{-MeC}_6\text{H}_4\text{SbCl}_2$ with $p\text{-MeC}_6\text{H}_4\text{N}_2\text{OAc}$ in Me_2CO gave 60% $p\text{-MeC}_6\text{H}_4\text{Sb(OAc)}_3$, $p\text{-MeC}_6\text{H}_4\text{N}_2\text{OAc}$ and 20% $(p\text{-MeC}_6\text{H}_4)_2\text{Sb(OAc)Cl}_2$, isolated as $(p\text{-MeC}_6\text{H}_4)_2\text{SbOH}$, after NH_4OH treatment. Reaction of $(p\text{-MeC}_6\text{H}_4)_2\text{SbOAc}$ with $p\text{-MeC}_6\text{H}_4\text{N}_2\text{OAc}$ similarly gave 59% $(p\text{-MeC}_6\text{H}_4)_2\text{Sb(OAc)}_3$, isolated as $(p\text{-MeC}_6\text{H}_4)_2\text{Sb(OH)OAc}$ after hydrolysis. Similarly in cold Me_2CO $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}_2$ and $o\text{-ClC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ gave 73% $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}_3$. In an energetic reaction $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}_2$ and $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ gave 45% $(o\text{-ClC}_6\text{H}_4)_2(p\text{-O}_2\text{NC}_6\text{H}_4)_2\text{SbCl}_3$, m. 202°. $(o\text{-EtOC}_6\text{H}_4)_2\text{SbCl}_2$ and 2 $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}_2$, m. 189-90°, when the mixt. was heated 0.5 hr. to 50° after the initial cold reaction. Similarly $(o\text{-EtOC}_6\text{H}_4)_2\text{SbCl}_2$ and $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ in an energetic reaction gave 82% $(o\text{-EtOC}_6\text{H}_4)_2(p\text{-O}_2\text{NC}_6\text{H}_4)_2\text{SbCl}_3$, m. 230°. Usually only a limited range of Sb derivs. are arylated by any one of the above reagents, although the diazonium acetates are usually the most reactive. G. M. Kosolapoff

Rentov, O. A.

New possibilities of synthesis of organoantimony compounds through the double salts of antimony trichloride and diazonium salts. A. N. Nesmeyanov, O. A. Rentov and O. A. Pitsyna. *Doklady Akad. Nauk S.S.S.R.* 91, 1341-4 (1953); cf. C.A. 39, 4320'. — $\text{ArN}_2\text{Cl.SbCl}_3$ in Me_2CO suspension with powd. Fe at 0° yields Ar_2SbCl or ArSbCl_2 depending on the reagent ratios. Thus, to 25 g. $\text{PhN}_2\text{Cl.SbCl}_3$ in 76 ml. dry Me_2CO was added over 30-40 min. at 0° 3.3 g. powd. Fe; the mixt. stirred 40 min. longer, filtered, the solvent evapd., the residue rubbed with 50 ml. 5N HCl, treated with 25-30 ml. 96% EtOH, and the whole poured into ice-5% NH_4OH , yielding 9 g. (85%) Ph_2SbOH , reconverted to Ph_2SbCl , m. 171-2° (from 5N HCl). Similarly, equimolar proportions of $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ and Fe gave 97% $(p\text{-O}_2\text{NC}_6\text{H}_4)_2\text{SbOH}$, converted to $(p\text{-O}_2\text{NC}_6\text{H}_4)_2\text{SbCl}$, shrinking at 190° (from 5N HCl). $p\text{-MeC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$, shrinking at 190° (from 5N HCl). $p\text{-MeC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ (20 g.) and 3.3 g. Fe gave 28% $(p\text{-MeC}_6\text{H}_4)_2\text{SbCl}$, m. 155-6°, directly, while the mother liquor, after NH_4OH treatment, gave 43% $(p\text{-MeC}_6\text{H}_4)_2\text{SbOH}$. An equimolar mixt. of $x,1,3\text{-XN}_2\text{C}_6\text{H}_4\text{Me}_2$ and Fe gave 36%

$[x-(1,3\text{-Me}_2\text{C}_6\text{H}_4)]_2\text{Sb(OH)Cl}$, after addn. of EtOH; with H_2O , this gave the corresponding stibinic acid (analysis given), converted to $[x-(1,3\text{-Me}_2\text{C}_6\text{H}_4)]_2\text{SbCl}$, m. 169-70°. $o\text{-EtOC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ (20 g.) and 3 g. Fe gave 49% $(o\text{-EtOC}_6\text{H}_4)_2\text{SbCl}$, m. 230-1°, while the ammoniacal soln. gave 42% $(o\text{-EtOC}_6\text{H}_4)_2\text{SbOH}$, which yielded $(o\text{-EtOC}_6\text{H}_4)_2\text{SbCl}$, m. 149-50°. Similarly 20 g. $(o\text{-ClC}_6\text{H}_4)_2\text{N}_2\text{Cl.SbCl}_3$ and 2.6 g. Fe gave 9% $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}$, m. 94-5°, and 80% $(o\text{-ClC}_6\text{H}_4)_2\text{Sb(OH)Cl}$, m. 174-5°. Equimolar amts. of the p -isomer and Fe similarly gave 10% $(p\text{-ClC}_6\text{H}_4)_2\text{SbCl}$, m. 193-4°, and 85% $(p\text{-ClC}_6\text{H}_4)_2\text{SbOH}$ [($p\text{-ClC}_6\text{H}_4$) $_2\text{SbCl}$ from this, m. 149-50°]. $p\text{-BrC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ (19 g.) and 3 g. powd. Fe gave 9% $(p\text{-BrC}_6\text{H}_4)_2\text{SbCl}$, m. 108.5-0.0°, and 90% $(p\text{-BrC}_6\text{H}_4)_2\text{SbOH}$ [($p\text{-BrC}_6\text{H}_4$) $_2\text{SbCl}$, m. 159°]. $p\text{-IC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ (20 g.) and 3 g. Fe gave 86% $(p\text{-IC}_6\text{H}_4)_2\text{SbOH}$, which with 5N HCl yielded $(p\text{-IC}_6\text{H}_4)_2\text{Sb(OH)Cl}$, m. 145-6°. $o\text{-MeOC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_3$ (20 g.) and 3 g. powd. Fe gave 67% $(o\text{-MeOC}_6\text{H}_4)_2\text{SbCl}$, m. 245°, and 9% $(o\text{-MeOC}_6\text{H}_4)_2\text{SbOH}$, m. 111-12° (from $\text{CHCl}_3\text{-EtOH}$). G. M. Kosolapoff

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REUTOV, O.A., professor; MAZENTSEV, V.A., redaktor; NEGRIMOVSKAYA, R.A.,
tekhnicheskiiy redaktor

[Organic synthesis] Organicheskiy sintez. Izd. 3-e. Moskva, Gos.
izd-vo tekhniko-teoret. lit-ry, 1954. 62 p. (MLRA 8:7)
(Chemistry, Organic--Synthesis)

REUTOV O.A.

TERENIN, A.N., akademik; KONDRAT'YEV, V.N., akademik; KNUNYANTS, I.L., akademik; KABACHNIK, M.I.; SOLOLOV, N.D., doktor fis.-mat. nauk; REUTOV, O.A., doktor khimicheskikh nauk; MOSEVICHEVA, N.I., tekhnicheskii redaktor

[Status of the theory of chemical structure in organic chemistry]
Sostoianie teorii khimicheskogo stroeniia v organicheskoi khimii.
Moskva, Izd-vo Akademii nauk SSSR, 1954. 122 p. [Microfilm]
(MLRA 7:10)

1. Chlen-korrespondent AN SSSR (for Kabachnik) 2. Akademiya nauk
SSSR. Otdeleniye khimicheskikh nauk
(Chemical structure) (Chemistry, Organic)

REUTOV, O. A.

USSR/Chemistry Synthesis

Card : 1/1

Authors : Nesmeyanov, A. N., Reutov, O. A., and Knol', P. G.

Title : Synthesis of arylstibine acids from binary diazonium salts of antimony pentachloride

Periodical : Izv. AN SSSR, Otd. Khim. Nauk., 3, 410 - 417, May - June 1954

Abstract : The formation of arylstibine acids, resulting from the decomposition of binary diazonium salts of antimony pentachloride with cuprous chloride in a medium of organic solvents, was investigated. The homolytical, but not a free-radical nature of the reaction leading to the formation of arylstybine acids, was established by the nature of the secondary reaction products. The three stages bringing about the formation of arylstibine acid are described. Nine references: 6 USSR, 2 German, 1 USA. Tables.

Institution : The M. V. Lomonosov State University, Moscow

Submitted : July 1, 1953

Reutov, O. A.

Subject : USSR/Chemistry AID P - 1017
Card 1/1 Pub. 119 - 2/8
Author : Reutov, O. A.
Title : Homolytic reactions in the chemistry of organometallic compounds
Periodical : Usp. khim., 23, no. 4, 426-478, 1954
Abstract : Homolytic reactions resulting in the formation of organometallic compounds are reviewed, namely: the interaction of alkyl halides with metals, of acyl peroxides with metallic mercury, of free radicals with metals in the gaseous phase; synthesis via diazo compounds; formation by addition of metals to unsaturated and aromatic compounds and of halides to unsaturated compounds; formation by reduction on cathodes and by mercuration of aromatic compounds. Homolytic reactions of organometallic compounds (thermal decomposition, photochemical reactions, electrolysis and reactions initiated by catalysts) are also covered.
Institution : None
Submitted : No date

REUTOV, O. A.

USSR/Chemistry Synthesis methods

Card : 1/1 Pub. 151 - 33/35

Authors : Reutov, O. A., and Kondratyeva, V. V.

Title : Synthesis of antimony-organic compounds of the Ar_2SbX_3 and Ar_3SbX_2 type from binary diazonium salts of antimony pentachloride

Periodical : Zhur. ob. khim. 24, Ed. 7, 1259 - 1265, July 1954

Abstract : A new method, for the synthesis of hitherto unknown binary diazonium salts of $SbCl_5$, is described. Also described is a method for the synthesis of antimony-organic compounds of the Ar_2SbX_3 and Ar_3SbX_2 type from the binary salts of $SbCl_5$. The substances formed during the decomposition of binary diazonium salts of $SbCl_5$, by pulverulent iron in acetone, are listed in table. Two USSR and 1 USA reference.

Institution : State University, Moscow

Submitted : February 13, 1954

REUTOV, O.A.

USSR/Chemistry - Salts

Card 1/1 : Pub. 22 - 25/44

Authors : Reutov, O. A., and Markovskaya, A. G.

Title : Binary diazonium salts of aryl-antimony tetrachloride

Periodical : Dok. AN SSSR 98/6, 979-982, October 21, 1954

Abstract : The results obtained during the synthesis of a large array of binary salts of the $ArSbCl_4 \cdot Ar'N_2Cl$ type, are tabulated. It was established that binary salts have an approximately uniform solubility and can be stored for many weeks without any noticeable decomposition. The physical properties of the synthesized salts, are described. One USSR reference (1952). Table.

Institution : The M. V. Lomonosov State University, Moscow

Presented by: Academician A. N. Nesmeyanov, May 26, 1954

USSR/Chemistry - Synthesis

Card 1/1 Pub. 22 - 22/40

Authors : Reutov, O. A.; Markovskaya, A. G.; and Lovtsova, A. N.

Title : Binary diazonium salts of diarylantimony trichloride

Periodical : Dok. AN SSSR 99/2, 269-272, Nov 11, 1954

Abstract : The derivation of binary diazonium salts of the $Ar_2SbCl_3 \cdot Ar'N_2Cl$ type, as a product from the interchange reaction between binary diazonium salts of ferric chloride and diarylantimony trichloride, is described. The entire reaction process is explained. Results obtained from the synthesis of numerous other binary diazonium salts of the above mentioned type, are tabulated. Detailed data regarding the solubility of these salts are included. Two USSR references (1952 and 1954). Table.

Institution : The M. V. Lomonosov State University, Moscow

Presented by : Academician A. N. Nesmeyanov, June 24, 1954

Reutov, O. A.

✓ New method of synthesis of unsymmetric organoantimony compounds of the type $ArAr'SbX$. O. A. Reutov and A. G. Markovskaya. *Doklady Akad. Nauk S.S.S.R.* 99, 543-5 (1984); cf. *C.A.* 49, 2928d. —Decompn. of $ArSbCl_2$, $Ar'N_2Cl$ in Me_2CO in the presence of powd. Fe yields $ArAr'SbCl$ with evolution of N and formation of $FeCl_2$. The products can be isolated as stibinic acids and identified as the chlorides or double salts with diazonium chlorides. When 0.80 g. Fe suspended in 100 ml. dry Me_2CO was treated with 4 g. $PhSbCl_2$, $p-MeC_6H_4N_2Cl$, the reaction was complete within a few min.; the ppt. sepd. after 0.5 hr., the filtrate evapd., and the residue washed with 5N HCl, taken up in EtOH, and poured into 5% NH_4OH , yielded 50% $Ph(p-MeC_6H_4)SbO_2H$, which with 5N HCl gave the

corresponding trichloride, m. 153.5-4°. Similarly were obtained: 55% $Ph(p-EtOC_6H_4)SbO_2H$, identified by treatment in EtOH with excess $p-MeC_6H_4N_2Cl$, $FeCl_2$, which gave $Ph(p-EtOC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$, decomp. 86°; 76% $Ph(p-ClC_6H_4)SbO_2H$ (trichloride, m. 121°); 86% $Ph(p-BrC_6H_4)SbO_2H$, which gave $Ph(p-BrC_6H_4)SbCl_2$, PhN_2Cl , decomp. 150-65°; 75% $Ph(p-IC_6H_4)SbO_2H$ (trichloride, m. 137-8°); 95% $p-MeC_6H_4SbPhO_2H$, which gave $Ph(p-MeC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$, decomp. 107°; 85% $Ph(p-EtOC_6H_4)SbO_2H$ [$Ph(p-EtOC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$, decomp. 86°]; 80% $Ph(p-ClC_6H_4)SbO_2H$ [$Ph(p-ClC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$, m. 111° (decompn.)]; 71% $Ph(p-O_2NC_6H_4)SbO_2H$ [$Ph(p-O_2NC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$, decomp. 98°]. $p-EtOC_6H_4SbCl_2$, $p-O_2NC_6H_4N_2Cl$ (0.017 mole) with Fe gave 6.8 g. mixed $(p-EtOC_6H_4)(p-O_2NC_6H_4)SbO_2H$ and $p-EtOC_6H_4SbO_2H$, which with excess $p-MeC_6H_4N_2Cl$, $FeCl_2$, yielded a mixt. of 25% $p-EtOC_6H_4(p-O_2NC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$ and 75% $p-EtOC_6H_4SbCl_2$, $p-MeC_6H_4N_2Cl$; reprecipn. from Me_2CO with EtO resulted in isolation of the former, decomp. 106°, the less sol. component. $p-O_2NC_6H_4SbCl_2$, $p-EtOC_6H_4N_2Cl$ (0.015 mole) with 0.03 g.-atom Fe gave 51% $(p-EtOC_6H_4)(p-O_2NC_6H_4)SbO_2H$, isolated as $(p-EtOC_6H_4)(p-O_2NC_6H_4)SbCl_2$, $p-MeC_6H_4N_2Cl$, decomp. 106°. $PhSbCl_2$, 3,4- $Me_2C_6H_3N_2Cl$ (10.4 g.) with Fe gave 5.25 g. $Ph(3,4-Me_2C_6H_3)SbOCl$, which with HCl yielded RR, $SbCl_2$, m. 182° (from AcOH).

O. M. Koshcheg

①

ELDERFIELD, Robert G.; REUTOV, O.A., [translator]; LUTSENKO, I.F.
[translator]; KOCHETKOV, N.K. [translator]; KONDTRAT'YEVA, G.Ya.
[translator]; YUR'YEV, Yu.K., professor, redaktor; SHABAROV, Yu.S.
redaktor; OGANDZHANOVA, N.A., redaktor; GERASIMOVA, Ye.S.,
tekhnicheskii redaktor.

[Heterocyclic compounds. Translated from the English] Geterotsi-
klicheskie soedineniia. Perevod s angliiskogo O.A. Reutova, i dr.
Pod red. Iu.K. Iur'eva. Moskva, Izd-vo inostrannoi lit-ry, Vol.
4. 1955. 538 p. (MLRA 8:11)

(Heterocyclic compounds)

REUTOV, O. A.

U S S R .

11232* Reaction Mechanisms of Electrophilic Substitution for the Saturated Carbon Atom. O mekhanizme reaktsii elektrofily'nogo zameshcheniya u nasychennogo uglerodnogo atoma. (Russian.) A. N. Nesmelanov and O. A. Reutov. Moskovskogo Universiteta Vestnik, Seriya Fiziko-Matematicheskiye i Estestvennykh Nauk, 1935, nos. 4-5, Apr.-May, p. 133-143.

Nucleophilic, radical, and electrophilic substitutions; manner in which symmetrization takes place, 10 ref.

Smw JPK

Reutov, O. A.

✓ The synthesis of aromatic organic arsenic compounds by the diazo method of Nesmeyanov. O. A. Reutov and Yu. G. Bundel. *Vestnik Moskov. Univ.* 10, No. 8, Ser. Fis. Mat. i Estestven. Nauk No. 5, 85-9(1955); cf. C.A. 50, 9318f. Double salts of the type $RN_2Cl \cdot FeCl_3$ with $AsCl_3$ in dry Me_2CO treated with Fe powder at -10° and kept below 7° with stirring during reaction give $RAsCl_2$, N , $FeCl_3$, and $FeCl_2$. By increasing the amt. of double salt used, R_2AsCl , R_3As , and R_4AsCl_2 can also be obtained. Double salts with $ZnCl_2$ can be used, as can Zn powder. When $R'AsCl_2$ is used instead of $AsCl_3$, mixed aryl As compds. are obtained. Yields vary from 3-68% based on the double salt.

H. M. Leicester

Chin Org. Chem, Moscow State U.

508
NESMEYANOV, A.N.; REUTOV, O.A.

The mechanism of electrophilic substitution in saturated carbon atoms. Vest. Mosk. un. 10 no.45:133-143 Ap-May '55. (MLRA 8:8)
(Substitution (Chemistry))

REUTOV, O. A.

USSR/ Chemistry - Conferences

Card 1/1 Pub. 124 - 11/25

Authors : Reutov, O. A., Dr. of Chem. Sc.

Title : International Congress on Theoretical and Applied Chemistry in Zurich

Periodical : Vest. AN SSSR 25/12, 65-67, Dec 1955

Abstract : Notes are presented by a member of the Soviet delegation on the activities of the International Congress on Theoretical and Applied Chemistry, held in July 1955, in Zurich, Switzerland. Names of scientists present at the conferences are listed. One Swiss reference (1955).

Institution :

Submitted :

REUTOV, O. H.

6


Synthesis of aromatic organoarsenic compounds from double diazonium salts. O. A. Reutov and Yu. G. Bunzel (State Univ., Moscow), *Zhur. Obshchei Khim.* 25, 2321-32 (1955).—Addn. of 13.5 g. $\text{PhN}_2\text{Cl.FeCl}_2$ over 0.5 hr. to 8 g. AsCl_3 in 50 ml. dry Me_2CO contg. 14 g. powd. Fe with ice cooling, followed by filtration, evapn., washing with 1:1 HCl and treatment with aq. KOH gave traces of PhAsO and extn. with Me_2CO gave $(\text{Ph}_2\text{As})_2\text{O}$, m. $92-3^\circ$ in 38% yield. With higher proportion of the diazonium salt and free Fe there is obtained up to 43% AsPh_3 when the double salt is $\text{PhN}_2\text{Cl.ZnCl}_2$ instead of that with FeCl_2 . Similarly 2,4,6- $\text{Br}_3\text{C}_6\text{H}_2\text{N}_2\text{Cl.ZnCl}_2$ treated in Me_2CO with AsCl_3 and powd. Fe gave 60% $[(2,4,6\text{-Br}_3\text{C}_6\text{H}_2)_2\text{As}]_2\text{O}$, m. $171-3^\circ$. If an excess of the double diazonium salt is added after the 1st reaction has been completed, there is obtained 11% $[(2,4,6\text{-Br}_3\text{C}_6\text{H}_2)_2\text{As}]_2\text{O}$, m. $169-71^\circ$, and 40% $(2,4,6\text{-Br}_3\text{C}_6\text{H}_2)_2\text{As}$, m. $81-3^\circ$. Addn. of 25 g. powd. Fe to 6.7 g. $\text{PhN}_2\text{Cl.FeCl}_2$ in 50 ml. Me_2CO , contg. 4 g. AsCl_3 and 12 g. dry FeCl_2 gave a slow gas evolution (several hrs.) and failed to yield any org. derivs. of As. Addn. of powd. Fe to an Me_2CO suspension of $\text{PhN}_2\text{Cl.ZnCl}_2$ contg. AsCl_3 and ZnCl_2 also failed to yield any individual As derivs. If the added ZnCl_2 is omitted, there is formed 18.5% Ph_2As and Ph_2AsO (11%). $p\text{-MeC}_6\text{H}_4\text{N}_2\text{Cl.ZnCl}_2$ reacting as above with AsCl_3 and ZnCl_2 also failed to give any individual products, but in absence of added ZnCl_2 a viscous mass is obtained from

(over)

which no pure substances were isolated. Reaction of 5 g. Fe added over 1 hr. to 25.8 g. $p\text{-BrC}_6\text{H}_4\text{N}_2\text{Cl}\cdot\text{ZnCl}_2$ in Me_2CO contg. 10 g. PhAsCl_2 gave after evapn. and extrn. with CHCl_3 some $p\text{-BrC}_6\text{H}_4\text{AsPhCl}$, b. $200\text{--}25^\circ$, which with H_2O_2 gave $p\text{-BrC}_6\text{H}_4\text{AsPhO}_2\text{H}$, m. $181\text{--}5^\circ$. The ZnCl_2 double salts were used for prepn. of the following new derivs.: $(2,4,6\text{-Br}_3\text{C}_6\text{H}_2)_2\text{AsPh}$, m. 185° ; $\text{Ph}(\text{p-BrC}_6\text{H}_4)_2\text{AsO}_2\text{H}$, m.

158° . The possible mechanisms of the reaction are discussed. G. M. Kosolapoff

PM

$\frac{2}{2}$ 

REUTOV, O.

Present state of the theory of chemical constitution in organic chemistry. II. Tr. from the Russian. (To be contd.) p. 58. (Magyar Kemiai Folyoirat, Budapest, Vol. 61, no. 2, Feb. 1955)

SO: Monthly list of East European Accessions (EEAL), LC Vol 4, no. 6, June 1955 Uncl

Reutov, O. A.

USSR/Chemistry - Free radicals

Card 1/1 Pub. 22 - 26/59

Authors : Reutov, O. A., and Ptitsyna, O. A.

Title : Binary diazonium salts of aryldichlorostibines of the $\text{ArSbCl}_2 \cdot \text{Ar}'\text{N}_2\text{Cl}$ type

Periodical : Dok. AN SSSR 102/2, 291-294, May 11, 1955

Abstract : The synthesis of binary diazonium salts of aryldichlorostibines was realized by a method previously applied to the synthesis of binary diazonium salts of arylantimony tetrachloride and diarylantimony trichloride. It is shown that the stability of $\text{ArSbCl}_2 \cdot \text{Ar}'\text{N}_2\text{Cl}$ type salts depends upon the nature of the Ar' and Ar . Certain substituents in the radical of the organoantimony component were found to decrease the stability of binary salts. Thirteen references: 1 USA and 12 USSR (1912-1954). Tables.

Institution : Moscow State University im. M. V. Lomonosov

Presented by : Academician A. N. Nesmeyanov, December 30, 1954

REUTOV, O.A.; MARKOVSKAYA, A.G.; MARDALYSHVILI, R.Ye.

Kinetics of the decomposition of the double salts
p- $\text{IC}_6\text{H}_4\text{SbCl}_4 \cdot \text{C}_6\text{H}_5\text{N}_2\text{Cl}$ by iron powder. Dokl.AN SSSR 104 no.2:253-255
S '55. (MLRA 9:2)

1.Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova. Pred-
stavleno akademikom A.N.Nesmeyanovym.
(Antimony organic compounds) (Diazonium compounds)

REUTOV, Oleg Aleksandrovich; KOROBITSYNA, I.K., redaktor; MULIN, Ye.V.,
tekhnicheskiiy redaktor

[Theoretical problems in organic chemistry.] Teoreticheskie
problemy organicheskoi khimii. [Moskva] Izd-vo Mosk.univ., 1956.
492 p. (MLRA 10:5)
(Chemistry, Organic)

REUTOV, O.A.

USSR/Organic Chemistry. Theoretical and General
Questions of Organic Chemistry.

E-1

Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26657.

Author : Reutov, O.A.

Inst : Academy of Sciences of USSR; Moscow Uni-
versity.

Title : Mechanism of Reactions of Diazocompounds
with Metals Resulting in Formation of
Metallo-Organic Compounds.

Orig Pub : Izv. AN SSSR, Otd. khim. n., 1956, No. 8,
943 - 950; Uch. zap. Mosk. un-ta, 1956,
vyp. 175, 71 - 84.

Abstract : The bibliographical data and the results of
author's work in the field of the synthesis
of Sb-organic compounds are discussed. This
synthesis was carried out by the dissociation
of binary diazonium salts of the type

Card 1/2

Reutov, O. A.

Chem / Mechanism of reactions of substitution at a saturated carbon atom. O. A. Reutov. *Uspekhi Khim.* 25, 933-68 (1956).—Review with 72 references through 1954 of nucleophilic, electrophilic, and radical reactions. G. M. K.

LFH

REUTOV, O. A.

Qu ✓ The kinetics of the decomposition of diazonium salts with powdered iron. O. A. Reutov, A. G. Markovskaya, and R. E. Mardaleishvili (M. V. Lomonosov State Univ., Moscow). *Zhur. Fis. Khim.* 30, 2533-8(1956); cf. *C.A.* 50, 8180a. The kinetics of the decompn. of the diazonium salts, $\text{PhSbCl}_4 \cdot p\text{-VC}_6\text{H}_4\text{N}_2\text{Cl}$, was studied. Y substituents were O_2N , Cl , H , Me , and EtO , arranged in increasing order as electron donors. In the decompn. with powd. Fe in acetone soln, the reaction velocity was found to decrease with the increase in the electron donating power, in agreement with an earlier assumption of a heterolytic mechanism for the reaction. When Y substituents were meta-directing, e.g., NO_2 , CO_2Et , the double diazonium salts were readily dissocd. in acetone at room temp. With powd. Fe, the decompn. of the double salt and that of the free aryldiazonium chloride occurred. W. M. Sternberg

REUTOV, O. A.

7 7 2 6

Stereochemistry of symmetrization reaction of 3-bromo-
mercuricamphor. O. A. Reutov and Tsin-Chzhu Lu (M.
V. Lomonosov State Univ., Moscow), Doklady Akad.
Nauk S.S.S.R. 110, 576-7(1958).—The 2 diastereoisomers
 (I and II) of 3-bromomercuricamphor, m. 222-3°, $[\alpha]_D^{25}$
 -30.7°, and m. 218-18°, $[\alpha]_D^{25}$ -120°, resp., were sym-
 metrized. I was treated with $\text{Na}_2\text{S}_2\text{O}_4$ yielding primarily
 one isomer of bis(camphor)mercury, decomp. 220-30°,
 which with HBr gave pure I. This indicates preservation
 of configuration during the symmetrization which is a
 form of electrophilic displacement. When I was treated with
 $\text{NaH}, \text{H}_2\text{O}$ 2 isomers of R_2Hg were formed; the mixt. treated
 with HBr gave mixed I and II in 70-30 ratio. Thus one of
 the camphor units is racemized at the C atom on which
 the displacement occurs. The indication is therefore that
 hydrazine-induced reaction passes through a radical mech-
 anism. Attempt to symmetrize I by sodium stannite failed,
 since only camphor formed.

G. M. Kosolapoff

RM

Reutov, O. A.

Stereochemistry of symmetrization reaction of 3-bromo-
mercuricamphor, O. A. Reutov and Tsai-Chih-Lu.
Proc. Acad. Sci. U.S.S.R., Sect. Chem. 110, 693-694 (1966).
(English translation).—See C.A. 51, 8042c. B. M. R.

PM

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REUTOV, O. A.

chem
 (Synthesis of organomercury compounds from hydrazones.
 R. N. Nesmeyanov, O. A. Reutov, and A. S. Loseva (M.
 V. Lomonosov State Univ., Moscow). *Doklady Akad.
 Nauk S.S.S.R.* 111, 835-8 (1956).— $(CH_3)_2C:NNH_2$ and
 $Hg(OAc)_2$ in aq. $Cu(OAc)_2$ yielded $N, AcOH, AcOH$, and
 $1-cyclohexenylmercury acetate$ (I), m. 110-0.5°; excess hy-
 drazone reduced $AcOH$ to Hg^0 . I was stable to alkali and
 NH_4OH , reduced $KMnO_4$, and reacted with $Br-H_2O$.
 Treatment with HCl yielded cyclohexene; with KCl, KBr
 or KI , I gave the corresponding *chloride*, m. 181-2°, *brom-*
ide, m. 174-5°, and *iodide*, m. 177-8°. The chloride with
 Na stannite gave *di-1-cyclohexenylmercury*, b.p. 170°. 4-
 Methylcyclohexanone hydrazone similarly gave *4-methyl-*
1-cyclohexenylmercury acetate, isolated as the *chloride*, m.
 167-8.5°. Cyclopentanone hydrazone similarly gave
 $[(CH_3)_2CH_2CH_2O, decomp. 60^\circ. Me_2C:NNH_2$ gave $[Ac-$
 $OH_2CH_2CH_2CH_2CH_2O, decomp. 180^\circ$, which with Br
 gave bromoacetone, with concd. HCl or $Na-Hg$ and H_2O ,
 Me_2CO , and with KCl the corresponding *dichloride*, de-
 comp. 146-50°. Camphor hydrazone with $Hg(OAc)_2$ in
 aq. medium gave a *dibornyl ether tetramercury acetate*, iso-
 lated as the *tetrachloride*, decomp. 210°, but in C_6H_6 medium
 the reaction gave a *dimercury acetate deriv. of dibornyl*
ether, isolated as the *dichloride*, m. 153-5°. This with alc.
 KOH gave camphor while with concd. HCl it gave bornyl
 chloride. Reaction of cyclohexanone, o-nitrobenzaldehyde,
 or $BzPh$ hydrazones in C_6H_6 with $Hg(OAc)_2$ gave $RR'C$
 $(HgOAc)OAc$ derivs., convertible to $RR'CH_2Cl(OAc)$ with
 $CaCl_2$. All these products yield Hg^0 in treatment with
 bases. Thus were isolated $Ph_2CH_2Cl(OAc)$, decomp. at
 room temp., and $o-O_2NC_6H_4CH_2Cl(OAc)HgCl$, m. 140°. The
 mechanism of the reaction was discussed at length.

G. M. Kosolapoff—

REUTOV, O.A.

NESMEYANOV, A.N.; REUTOV, O.A.

Using diazo compounds for the synthesis of metallo-organic compounds
of elements of the fifth group of the periodic system. Uch.zap.Mosk.
un. no.175 '56. (MIRA 10:3)

(Diazo compounds) (Organometallic compounds)
(Chemical elements)

REUTOV, O.A.

USSR/Organic Chemistry. Synthetic Organic Chemistry. E-2

Abs Jour: Ref Zhur - Khimiya, No. 8, 1957, 26892.

Author : Nesmeyanov, A.N., Reutov, O.A.

Inst : Moscow University.

Title : Synthesis of Metallo-Organic Compounds of
Elements of 5th Group of Periodical System
of Mendeleyev Using Diazocompounds.

Orig Pub: Uch. zap. Mosk. un-ta, 1956, vyp. 175, 55 -
69.

Abstract: Review. Bibliography with 35 titles.

Card 1/1

REUTOV, O.A.

Mechanism of the synthesis of metallo-organic compounds by using
diaz compounds. Uch.sap.Mosk.un. no.175;71-84 '56. (MIRA 10:3)
(Organometallic compounds)
(Diaz compounds)

REUTOV, O., Lomonosov University, Moscow

"On the Mechanism of Electrophilic Substitution on a Saturated Carbon Atom," a paper submitted at the 16th International Congress of Pure and Applied Chemistry, Paris, 18-24 July 1957.

Reutov, O. A.

Synthesis of mixed organoarsenic compounds of type $ArAr'AsX$ and $ArAr'Ar''As$ from double diazonium salts. A. N. Nesmeyanov, O. A. Reutov, Yu. G. Bündel, and I. P. Beletskaya (M. V. Lomonosov State Univ., Moscow). *Izv. Akad. Nauk S.S.S.R., Otd. Khim. Nauk* 1957, 929-41. — To 10 g. $PhAsI_2$ in Me_2CO was added at 0° 6.7 g. $PhN_2ClZnCl_2$, the mixt. (after evolution of N had subsided) filtered, the ppt. washed with Me_2CO , and filtrates evapd. gave a viscous liquid which after washing with 1:1 HCl and treatment with 40% KOH gave $(Ph_2As)_2O$, m. 91°, in 71% yield. To 9.6 g. $PhN_2ClZnCl_2$ in Me_2CO was added 8 g. $PhAsCl_2$, followed at 0° by 9.0 g. NaI over 1.5 hrs.; after treatment as above there was isolated 42% $(Ph_2As)_2O$. Similarly was prepd. 39% $(p-ClC_6H_4AsPh)_2O$, which with HCl gave $p-ClC_6H_4AsPhCl$, b. 180-90°; oxidation of this with 30% H_2O_2 gave $p-ClC_6H_4AsPhO_2H$, m. 161-2°. Similarly $p-O_2NC_6H_4N_2ClFeCl_2$, $PhAsCl_2$, and NaI gave $p-O_2NC_6H_4AsO_2H$, decomp. 300°, and 51.6% $(p-O_2NC_6H_4AsPh)_2O$, which with HCl gave the chbroarsine, $p-O_2NC_6H_4AsPhCl$, b. 170-90°, which with H_2O_2 gave $p-O_2NC_6H_4AsPhO_2H$, m. 173°. Similarly was obtained $o-O_2NC_6H_4AsPhO_2H$, m. 193.5°, through the oxide $(o-O_2NC_6H_4AsPh)_2O$. Similarly was prepd. 20% $o-MeO_2CC_6H_4AsPhO_2H$, decomp. above 300°, and 60% $o-HO_2CC_6H_4AsPhO_2H$, m. above 300° (intermediate $o-HO_2CC_6H_4AsPhO_2H$ formed in 50% yield with some 20% Me ester). Similarly $PhAsCl_2$, $o-BtOC_6H_4N_2ClFeCl_2$, and NaI gave 64% $(o-BtOC_6H_4AsPh)_2O$, which oxidized with H_2O_2 to $o-BtOC_6H_4AsPhO_2H$, m. 182°. Analogously was obtained

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20 May

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A. N. Nesmeyanov, O. A. Revtsov, et al.

63% $(2-C_6H_5AsPh)_2O$, which gave $2-C_6H_5AsPhO_2H$, m. 157-9°. 71% $(p-MeC_6H_4AsPh)_2O$, which gave 37% $p-MeC_6H_4AsPhCl$, b.p. 190-225°, which gave $p-MeC_6H_4AsPhO_2H$, m. 182°. RN_2Cl and $PhAsCl_2$ with NaI gave as above $(p-BrC_6H_4AsPh)_2O$, which gave $p-BrC_6H_4AsPhCl$, b.p. 178-90°; in 25% overall yield, and this gave $p-BrC_6H_4AsPhO_2H$, m. 178°. To 5.6 g. $p-MeC_6H_4N_2Cl \cdot ZnCl_2$ in Me_2CO was added 5.7 g. $p-ClC_6H_4AsPhCl$ and, at 0° over 50 min., was added 1.5 g. powder Fe , yielding after aq. treatment 38% $(p-MeC_6H_4)(p-ClC_6H_4)AsPh$, viscous liquid; $HgCl_2$ adduct, m. 188-9°. Use of $p-BrC_6H_4AsPhCl$ similarly gave 52% $(p-MeC_6H_4)(p-BrC_6H_4)AsPh$, whose $HgCl_2$ adduct m. 196-7°. Similarly was prepd. 42% $(p-O_2NC_6H_4)(p-MeC_6H_4)AsPh$, whose $HgCl_2$ adduct m. 193-4°; 52% $(o-MeO_2C_6H_4)(p-MeC_6H_4)AsPh$, whose $HgCl_2$ adduct m. 192°; 79% $(p-BrC_6H_4)(o-MeO_2C_6H_4)AsPh$, whose dihydroxide is a solid and m. 212-15°; similarly was prepd. 62% $p-ClC_6H_4AsPh_2$, b.p. 225-30°; $HgCl_2$ adduct, m. 178°; 81% $p-BrC_6H_4AsPh_2$, whose $HgCl_2$ adduct m. 172-3°; $p-MeC_6H_4AsPh_2$, m. 48°, whose $HgCl_2$ adduct m. 182-3°. Similarly were obtained: 51% $p-O_2NC_6H_4AsPh_2$, m. 109°, whose $HgCl_2$ complex, m. 145-8°, and 73% $o-MeO_2C_6H_4AsPh_2$, m. 92°, whose $HgCl_2$ adduct m. 231-2° (decompos.).

G. M. Kosolapoff

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Reutov, O. A.

7
Mechanism of the synthesis of organometallic compounds through diazonium double salts. O. A. Reutov (Lomonosov Univ., Moscow). *Tetrahedron* 1, 67-74 (1987); cf. *C.A.* 50: 9318f. The kinetics of the decompn. of double salts, $p\text{-XC}_6\text{H}_4\text{SbCl}_4$, $p\text{-YC}_6\text{H}_4\text{N}_2\text{Cl}$, by powd. Fe in Me_2CO was studied. The reaction proceeded with the formation of $\text{XC}_6\text{H}_4(\text{YC}_6\text{H}_4)\text{SbCl}_4$. The substituents X increased the rate of reaction in the order $\text{O}_2\text{N} < \text{Cl} < \text{H} < \text{Me} < \text{EtO}$ and the substituents Y in the order $\text{EtO} < \text{Me} < \text{H}$. The relationship between the stability of the double salts $p\text{-XC}_6\text{H}_4\text{SbCl}_4$, $\text{YC}_6\text{H}_4\text{N}_2\text{Cl}$ and the character of the substituents X and Y was studied. Salts of this type decompd. readily to form $\text{XC}_6\text{H}_4(\text{YC}_6\text{H}_4)\text{SbCl}_4$. The electroneg. substituents X and electropos. substituents Y increased the stability of the salts. Electropos. X and electroneg. Y decreased the stability. The mechanisms of the reactions were discussed. The assumption was made that the decompn. of double diazonium salts by metal powders leading to the formation of organometallic compds. (Nesmeyanov reaction) was heterolytic in character. The relationship between the Nesmeyanov reaction and the Waters reaction (cf. Waters, *C.A.* 42: 6922g) was discussed. C. R. Addison

4E4j

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Rentov, O.A.

Distr: 4E4j/4E3d/
4E2c(j)

Reaction mechanism of substitution on the carbon atom in
mercury-organic compounds. O. A. Rentov, Vestnik
Moskov. Univ. 12, Ser. Mat., Mekh., Khim., Fiz. i Khim.
No. 4, 223-30 (1957).—A review with 18 references.
L. K. K.

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27 May
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REUTOV, O.R.
NESMEYANOV, A.N.; REUTOV, O.A.; BUNDEL, Yu.G.; BELETSKAYA, I.P.

Syn thesis of mixed organoarsenic compounds of the type $Ar\ Ar'\ AsX$
and $Ar\ Ar'\ Ar''\ As$ via binary diazonium salts. Izv. AN SSSR. Otd. khim.
 nauk no.8:929-941 Ag '57. (MIRA 11:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Arsenic organic compounds)

REUTOV, O.A.

Progress of organic chemistry in the U.S.S.R. during the years of
Soviet rule. Khim.v shkole 12 no.4:8-22 J1-Ag '57. (MLRA 10:8)
(Chemistry, Organic)

REUTOV, O. A.

Distr: 4E2c(j)/4E9d

✓ Reaction of arylazocarbonyl salts with *cis*- and *trans*- β -chlorovinylmercury chlorides. O. A. Reutov and B. M. Radnaya (State Univ., Moscow). *Zhur. Obshchei Khim.* 27, 2506-8 (1957).—Reaction of 35.7 g. *trans*-CHCl:CHHgCl with 29.5 g. $\text{PhN}_2\text{CO}_2\text{K}$ in dry Me_2CO rapidly yields a ppt. of KCl, KHCO_3 , and Hg and forms 18.5% PhHgCl and 12% *trans*- PhCH:CHCl . *cis*-CHCl:CHHgCl similarly gives 12% PhCH:CHCl , b_p 60–4°, n_D^{20} 1.5763, d_4^{20} 1.1623, which is probably the *cis* isomer. Reaction of *trans*-CHCl:CHHgCl with *p*- $\text{MeC}_6\text{H}_4\text{CO}_2\text{K}$ similarly gave 12% *p*- $\text{MeC}_6\text{H}_4\text{CH:CHCl}$, b_p 99–101°, n_D^{20} 1.5660. G. M. K.

am

11 5 may 2

REUTOV, O. A.

20-1-30/64

AUTHOR:
TITLE:

PTITSYNA, O.A., REUTOV, O.A., TURCHINSKIY, M.F.
The Synthesis of Tin-Organic Compounds by way of Double Iodides.
(Sintez olovoorganicheskikh soyedineniy cherez dvoynnye soli, Russian)
Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 1, PP 110-112 (U.S.S.R.)

PERIODICAL:

ABSTRACT:

Few data are found in chemical publications concerning the application of diaryl iodides as a starting point for the synthesis of metal-organic compounds. It was found that in the case of decomposition by metal powders of the double iodides (diaryliodonium) and chlorine-containing metals corresponding metal-organic compounds can be formed. The same can be done in the case of metal-organic compounds of other metals. (With 1 Table and 5 References).

ASSOCIATION:
PRESENTED BY:
SUBMITTED:
AVAILABLE:

Not given

Library of Congress

Card 1/1

REUTOV, O.A.

20-3-27/59

AUTHORS
TITLE

Nesmeyanov, Nik.A., Reutov, O.A.
The Influence of Substituents on the Strength of Ferrocene-Carboxylic Acids.

PERIODICAL
ABSTRACT

(Vliyaniye zamestiteley na silu ferrotsenkarbonovykh kislot -R₁ i R₂)
Doklady Akademii Nauk SSSR, 1957, Vol 115, Nr 3, pp 518-521 (U.S.S.R.)
It is known that ferrocene whos the properties of an aromatic compound in the substituent reactions. In the present paper the authors throw a light upon the similar question of the mutual exchange of the influence of the substituents through the ferrocene core. They produced the ferrocenecarboxylic acids with a common formula I (R₁ = -C₂H₅, -C₄H₉, -H, COOCH₃, -CO₂H, -COCH₃) and measured their dissociation constants. Furthermore monmethylether of the ferrocenedicarboxylic acid was produced by an uncompleted hydrolysis of the dimethyl-ether of this acid. Furthermore, in addition to the aforementioned, the constants of ferrocenecarboxylic-, butyric-, and benzoic acid are given in table I. The comparison between the dissociation constants shows that the introduction of alkyl into the unsubstituted cycle of the ferrocenecarboxylic acid reduces this constant whereas the introduction of a negative substituent increases it. Thus the acetyl- is 2,4 times stronger than the ferrocenecarboxylic acid. In the benzol series the p-acetyl benzoic acid is 4,2 times stronger than the benzoic acid and the p-carbomethoxylic benzoic acid 3,8 times stronger than the benzoic acid. Thus the influence of the substituents on the dissociation constant of the ferrocenecarboxylic acids is stronger than that of the benzoic acid.

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REUTOV, O. A.

20-4-25/51

AUTHORS:

Reutov, O. A., Beletskaya, I. P., and
Mardaleysvili, R. Ye.,

TITLE:

The Kinetics of the Electrophile Supplementary Reaction Beside
a Saturated Carbon Atom (Kinetika reaktsii elektrofil'nogo za-
meshcheniya u nasyshchennogo uglerodnogo atoma)

PERIODICAL:

Doklady AN SSSR, 1957, Vol. 116, Nr 4, pp. 617-620 (USSR)

ABSTRACT:

By means of the example of diastereomeric 1-methyl-ethers of the
 α -bromium-mercury-phenyl-acetic acid Nesmeyanov, Poddubnaya, and
the first author have found that the symmetrisation of the mer-
cury-organic salts takes place by ammonium which represents the
reaction mentioned in the title takes place under the maintain-
ance of the stereochemical configuration. The authors thought
from the first that it seems not very probable that the sym-
metrisation of the mentioned ethers passes the stage of anion
formation (in contrast to Hughes and Ingold, reference 4). The-
refore they investigated the kinetics of the reaction in question.
A mixture of the diastereomers and the diastomer with the melting
point 156° of the above mentioned ether alone were used for this
purpose. In order to investigate the order of the reaction with
respect to the initial substance $R_1R_2R_3C-HgX$, a method was used
which is based upon the nephelometry-principle. A photocell fixed

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the quantity alteration of the light passing through in the course of the reaction in consequence of the deposition formation of $(\text{NH}_3)_2\cdot\text{HgBr}_2$ according to an equation given here. The reaction has a second order for the two mercurized ethers (ethyl- and methyl). The symmetrisation of the first ethers takes place quicker of the latter. The constant of the reaction velocity is of second order:

$$K_2 = \frac{1}{C_0 T} \left(\frac{C_0}{C} - 1 \right), C \text{ is the concentration}$$

of substance in the time T ; $K_2 = K \cdot (\text{NH}_3)^2$ (so in the original text - the reporter), as it is shown in the further course. In the second part of the paper the order of the reaction was detected with respect to the second component- ammonium. If the concentration alteration of NH_3 in the course of the first half hour is equated with the initial velocity of the reaction it is easily to be proved that the initial velocity of the ammonium consumption is directly proportional to the square of its initial concentration. Thus the reaction investigated here has the second order with respect to the two substances. As the reaction took place not only with a different effect and is finished in the case of different quantities of consumed substance, it can be assumed that the symmetrisation reaction is reversible. This is con-

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firmed by the fact that the addition of the end product slows down the reaction (figure 4); the results obtained of the symmetrisation of mercury-organic salts by ammonium made the authors suggest a 2-stage mechanism of the reaction (scheme is given): I st (reversible) stage is the reaction mentioned in the title. In the II nd stage ammonium binds $HgBr_2$ and shifts the equilibrium I to the right. These results facilitate to detect for the first time a bimolecular mechanism of the reaction mentioned in the title in which the stereochemical configuration is conserved. There are 4 figures, 2 tables and 6 references, 1 of which is Slavic.

ASSOCIATION: State University imeni M. V. Lomonosov, Moscow (Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)

PRESENTED: March 15, 1957, by A. N. Nesmeyanov, Academician

SUBMITTED: February 22, 1957

AVAILABLE: Library of Congress

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AUTHORS:

Reutov, O. A., and Ostapchuk, G. M.

20-117-5-28/54

TITLE:

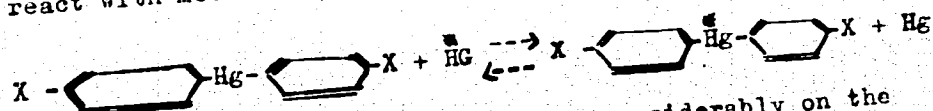
Isotopic Exchange Reaction Between Symmetric Organomercuric Compounds of the Aromatic Series and Metallic Mercury Labelled by Hg^{203} (Reaktsiya izotopnogo obmena simmetrichnykh rtutnoorganicheskikh soedineniy aromaticheskogo ryada s metallicheskoj rtut'yu, mechennoy Hg^{203}).

PERIODICAL:

Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 826-828 (USSR)

ABSTRACT:

The authors carried out a systematic investigation of the reactivity of various types of organomercuric compounds in the reactions of the isotopic exchange with metallic and haloid mercury. In present paper in this connection diaryl-mercury was investigated under the conditions given in the title. It was surprising that the symmetric organomercuric compounds react with metallic mercury under very mild conditions

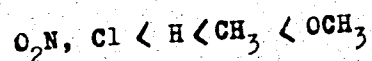


The velocity of the reactions depends considerably on the character of X. The reaction conditions are given. The

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Isotopic Exchange Reaction Between Symmetric Organomercuric 20-117-5-28/54
Compounds of the Aromatic Series and Metallic Mercury Labelled
by Hg203

following figures can give an explanation of this velocity. The equilibrium for diphenyl-mercury is reestablished in xylene at 140° within 30 minutes. In dioxane at 60° within 2 hours and 45 minutes. For di-p-anisyl-mercury: in dioxane at 60° within one hour. In benzene at 20° within 16 hours. The exchange is accelerated by the rise of temperature, as well as within certain limits by the increase of the mercury excess. Furthermore the dependence of the velocity of the isotopic exchange on the structure of the substituent X was determined. The experiments were carried out in pyridine. The results are given in table 1. They show that the velocity of the reaction of the isotopic exchange depends on the structure of the substituent X and increases in the order



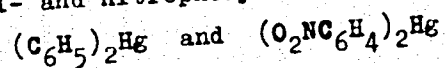
The preciseness of the experiments does not facilitate the detection for the authors which compound, dinitro-phenyl-mercury or dichlorophenylmercury reacts quicker with metallic

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20-117-5-28/54

Isotopic Exchange Reaction Between Symmetric Organomercuric
Compounds of the Aromatic Series and Metallic Mercury Labelled
by Hg²⁰³

mercury. The mild reaction conditions are obvious, especially in the case of di-*anisyl*-mercury which reacts already in the cold. Apparently the reaction takes place directly between the molecules of the di-*aryl*- and the metallic mercury. For this speak also the results of the isotopic exchange of the phenyl-*p*-nitrophenyl-mercury. After the isotopic equilibrium has been obtained, in the reaction mixture only the initial phenyl-*p*-nitrophenyl-mercury was found. If the reaction passes the stage of formation of free phenyl- and nitrophenyl-radicals,



are bound to exist in the reaction mixture besides the mentioned initial substance.
There are 1 table, and 5 references, all of which are
Slavic.

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Isotopic Exchange Reaction Between Symmetric Organomercuric 20-117-5-28/54
Compounds of the Aromatic Series and Metallic Mercury
Labelled by Hg²⁰³

ASSOCIATION: State University imeni M. V. Lomonosov, Moscow
(Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova).

PRESENTED: October 25, 1957, by A. N. Nesmeyanov, Academician

SUBMITTED: October 24, 1957

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20-6-23/47

AUTHORS: Reutov, O. A. , and U Yan Tsey

TITLE: The Isotopic Exchange Between Some Organomercuric Salts and Metallic Mercury Labelled by Hg^{203} (Izotopnyy obmen nekotorykh rtutnoorganicheskikh soley s metallicheskoym rtut'yu, mechennoy Hg^{203})

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 6, pp. 1003 - 1006 (USSR)

ABSTRACT: The authors found that the α -mercurized oxo-compounds under mild conditions react with metallic mercury labelled by the radioactive isotope Hg^{203} (references 1, 2): $R - Hg - X + Hg \rightleftharpoons R - Hg - X + Hg$.

The authors studied the interaction between metallic mercury and α -bromo-mercury-cyclohexane, α -bromo-mercury-phenyl-acetic acid-ethyl-ether, the β -methyl ether of the same acid, 3-bromo-mercury-3-benzyl-camphor, 3-bromo-mercury-camphor, 1-chloro-mercury-camphenylone, 2-bromo-mercury-camphane and n-butylmercuric bromide. The method of the measurement of radioactivity was earlier described by the authors (reference 2). By special tests it was proved that, in spite of the fact that the reaction is heterogeneous, the repeatability of the results is quite satisfactory. Table 1 shows the results. From them may be seen the order in which the reactivity of the α -mercurized oxo-compounds toward the metallic mercury decreased. This reactivity is not only determined by

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The Isotopic Exchange Between Some Organomercuric Salts and Metallic Mercury
Labelled by Hg²⁰³

the electronic character of the radicals at the carbon atom which is connected with mercury, but in several cases it is certainly determined by spatial factors. It is just for this reason that the *l*-methyl ether of α -bromo-mercury-phenyl-acetic acid probably reacts slower than the corresponding ethyl ether. On the other hand the activating action of the phenyl radical outweighs the steric difficulties created by themselves. 1-chloro-mercury-camphenyl-one does not even react with metallic mercury after 40 hours of heating at 100°C, just like 2-bromo-mercury-camphane and *n*-butyl-mercuric bromide which are no α -mercurized derivatives of oxo-compounds. The great inertia of the mercury atom in 1-chloro-mercury-camphenylone can for the time being not satisfactorily explained. The reaction of the isotopic exchange found by the authors, apparently is homolytic. As it was found in the study of some symmetrization reactions of organomercuric salts (references 3, 4) that the symmetrizing agent (NH₃, KJ) does not affect the R-HgX molecule, but connects the HgX₂ molecules which form due to a reversible reaction $2R - HgX \rightleftharpoons R - Hg - R + HgX_2$, it would be natural to try to find out whether such an equilibrium also plays a part in the present case. Experimental facts, however, contradict a further given scheme. Therefore the reaction of the iso-

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